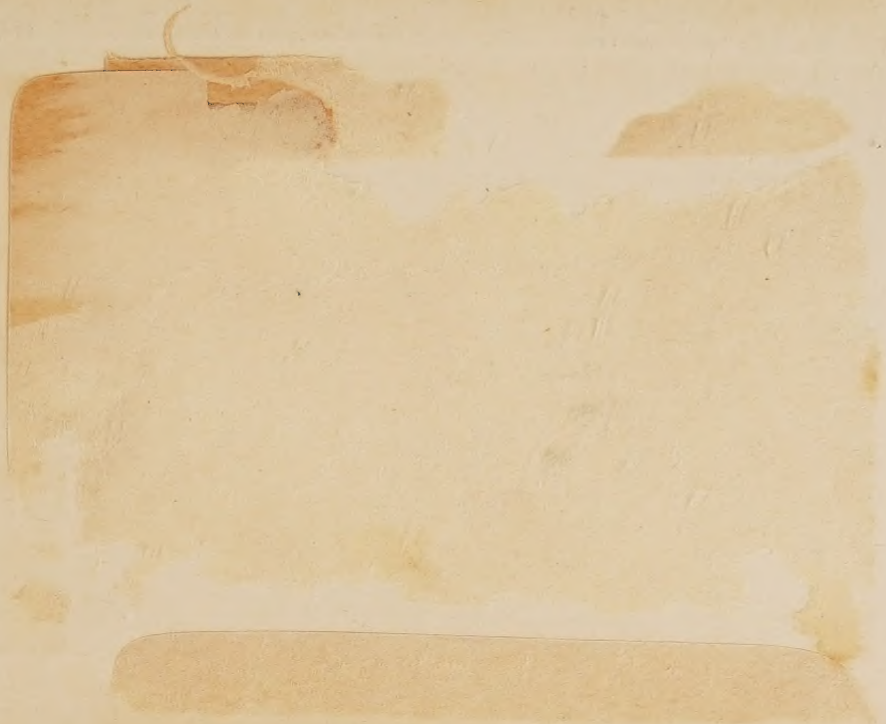
LOGIC

and

EPISTEMOLOGY

A. C. COTTER, S.J.



C

Date Due			

Digitized by the Internet Archive
in 2026

https://archive.org/details/logicepistemolog0000acco

LOGIC *and* EPISTEMOLOGY

By the same Author

COSMOLOGIA

Written in Latin. A happy blending of the old with the new, of scholastic principles with the findings of such modern sciences as physics and chemistry, geology and astronomy.

408 pages. Price $3.50

THE STRATFORD COMPANY
289 Congress Street
Boston, Mass.

LOGIC

and

EPISTEMOLOGY

By

A. C. COTTER, S.J.

Professor of Apologetics at Weston College, Weston, Mass. One time Professor of Philosophy at Woodstock College, Woodstock, Md.

Saint Ignatius College
160
LIBRARY
C
San Francisco, Calif.

THE
STRATFORD
COMPANY
BOSTON, MASSACHUSETTS
1931

2289

COPYRIGHT — 1930 — BY
THE STRATFORD COMPANY
Publishers
PRINTED IN THE UNITED STATES OF AMERICA

First Printing	May, 1930
Second Printing	October, 1930
Second and Revised Edition	April, 1931
Third Printing	September, 1932

Imprimi potest:

J. M. Kilroy, S.J.
Pracp. Prov. Nov. Ang.
Boston, Feb. 7, 1930

Imprimatur:

†William Cardinal O'Connell
Archbishop of Boston
Boston, March 21, 1930

BC108
C84l
c.8

Preface

Brevity, plain and direct presentation, close-knit reasoning and logical coherence—these are the aims which the author has kept in view throughout.

Nothing was farther from his mind than to write an exhaustive treatise. For the beginner an outline of fundamentals is far preferable. Hence questions disputed among Scholastics were eliminated for the most part. Also, merely psychological tidbits, though much in vogue today, were discarded. Even those points which seemed essential, were not developed to their full possibility. A text book is not meant to supplant the teacher. Rather the earnest teacher may be relied on to clothe the bare skeleton of his manual with the flesh of his own wider knowledge and to quicken the whole with the warm blood of his own personality.

"Brevis esse laboro; obscurus fio." The author hopes to have successfully avoided this other shoal of text books. For this reason technical language has been reduced to a minimum. In every chapter the student is told plainly how his present study fits in with what he already knows. Philosophy is not a rainbow, beautiful and useless. Philosophy is taught in Catholic colleges that it may become the backbone of the student's intellectual and moral life.

For this reason, too, the scholastic system and method were chosen for presentation. More than ten years of teaching scholastic philosophy have convinced the

author of its pedagogical worth. There is no other philosophical system in the market which can compare with the scholastic in common sense and definiteness of teaching. There is no other philosophical method which even approaches the scholastic in sound reasoning and logical coherence. To the beginner, who is not yet capable of grappling with flashy systems and tricky methods, such a philosophy is indispensable.

In conclusion, the author wishes to discharge a debt of gratitude to Rev. F. W. Boehm, S.J., Dean of the Philosophical Department at Boston College, who aided him by word and deed in the preparation of this manual. He also thanks the Stratford Company for the care which they took in its publication.

A. C. C.

Weston College,
Weston, Mass.
April 17, 1930.

Preface to Second Edition

Only a few minor changes have been made in Epistemology. But at the request of many teachers, Examples and Exercises have been added as an Appendix to Logic.

A. C. C.

February 15, 1931.

Table of Contents

Preface i

Philosophy 1

LOGIC

Introduction 7

Part 1. **The Term** 11
I. Ideas 12
II. Terms 16

Part 2. **The Proposition** 22
Chapter 1. The Categorical Proposition 24
I. Definition 24
II. Divisions 26
Chapter 2. The Hypothetical Proposition 31
I. Definition 31
II. Divisions 31

Part 3. **Reasoning** 33
Chapter 1. Immediate Inference 34
I. Opposition 34
II. Conversion 37
III. Possibility and Existence 39
Chapter 2. Mediate Inference 40

I. The Categorical Syllogism 40
II. The Hypothetical Syllogism 49
III. Other Forms of Inference 51

Part 4. **Method** 53
Chapter 1. The System 55
Chapter 2. Modes of Acquiring Systematic Knowledge 60
I. Division 60
II. Definition 62
III. Argumentation 66

Appendix 1. Fallacies 71
Appendix 2. The Thesis 75
Appendix 3. The Scholastic Disputation 77
Appendix 4. Exercises 86

EPISTEMOLOGY

Introduction 101
Preliminary Notions 103
Part 1. **Existence of Certitude** 106
Part 2. **Sources of Certitude** 117
Chapter 1. The Faculties in General 119
Chapter 2. The Single Faculties 126
I. Consciousness 126
II. The External Senses 132

III. Intellect 148
IV. Reason 168
V. Human Testimony 178

Part 3. **Nature of Certitude** 187
Chapter 1. Ultimate Motive of Formal Certitude 188
Chapter 2. Divisions of Formal Certitude 203
Chapter 3. Opinion and Probability 221

Part 4. **Truth and Error** 223
Chapter 1. Definitions 223
Chapter 2. Possession of Truth 226
Chapter 3. Criterion of Truth 229
Chapter 4. Degrees of Truth and Error 231
Chapter 5. Causes of Error 233
I. Proximate Causes 234
II. Remote Causes 235
III. Ultimate Causes 241

Index of Theses 243

Alphabetical Index 245

Philosophy

I. Definition

1. Nominal Definition. Philosophy (from φίλος and σοφία) literally means *"love of wisdom."* Hence the philosopher, by his very name, is a lover of wisdom.

The name is said to be due to Pythagoras. Others before him had called themselves simply *"wise men"* (σοφοί); his modesty bade him be satisfied with the less pretentious name of "lover of wisdom."

2. Real Definition

Many real definitions of philosophy have been put forward. The best is undoubtedly the one commonly accepted by Scholastics: *"Philosophy is the knowledge of all things through their last causes."*

This definition comprises three distinct elements. Let us look at each in turn.

a. Philosophy is *knowledge.* This word must be taken to mean not a mere knowledge of facts, valuable and fundamental though this be; it rather means what the Scholastics called *scientia,* that is, systematized knowledge, so that we clearly understand the relations between things, especially knowledge through causes, understanding why things are and must be so.

The word *"cause,"* however, must be taken in a very wide sense. It may refer to extrinsic or intrinsic causes, to concrete (the usual 4 causes as enumerated

by Aristotle) or abstract causes (i.e. universal concepts).

b. Philosophy is knowledge of *all things*. This is called the material object of philosophy.

Philosophy then deals first of all with reality, *"things."* Philosophy does not chase after the pot of gold at the rainbow's end, but takes its stand on the solid ground of reality. It seeks to understand why things are as they are and why they must be as they are.

Moreover, philosophy is all-embracing; it seeks to understand *all* things, all reality. The height of ambition. But this must not be misunderstood. God alone knows all things; God alone can know all things. Nor need the philosopher be a walking encyclopedia. But to be a true philosopher, a) his actual knowledge ought to cover at least the foundations and outlines of the various fields of human knowledge; b) his outlook must be universal; he must not shut his eyes wilfully to any particular class of things.

c. Philosophy reduces all things to their *last causes*. This is called the formal object of philosophy.

To do this, it is incumbent on the philosopher to study first of all these last causes themselves: their existence, their nature, their attributes. Some would even define philosophy as merely "knowledge of the last causes." Still this cannot be its adequate aim. After having studied the last causes, the true philosopher will return to his material object, viz. all reality, trying to understand and appreciate it in the light of the last causes. He wishes to know why all things are so and must be so owing to their connection with their last causes.

To simplify matters, we omitted from the definition of philosophy one element which we, as Catholics, must insert.

Also our faith teaches us the last causes of things and the relations of all things to them. It teaches us that God made all things, that He made them as imitations of His own goodness, that He made them ultimately for His own glory. Yet faith differs from philosophy. Faith believes these truths because God has directly revealed them; philosophy, on the contrary, while actually arriving at the same truths, relies on its natural powers and insight.

To bring out this difference, the Scholastics added to the definition of philosophy one modifying phrase: *"as far as this can be acquired by our natural powers,"* that is, without the special aid of God's revelation and grace.

II. Division

Philosophy is generally divided into three principal parts: Logic, Ethics, Metaphysics. *Logic* deals with the activities of our cognitive faculties, chiefly of the intellect, and their ultimate object. *Ethics* considers the activities and ultimate object of our appetitive faculties, chiefly of the will. *Metaphysics* has for its material object things as they are in themselves, including our faculties.

The following is the division fairly common nowadays: 1) Logic and Epistemology. 2) General Metaphysics or Ontology. 3) Special Metaphysics, comprising Cosmology, Psychology and Natural Theology. 4) Ethics.

LOGIC

INTRODUCTION

1. Definition

Logic is the *science and art of right reasoning.*

To explain:

Science ('scientia') means to know a thing through its causes, i.e. to know not only that a thing *is* so, but also that it *must* be so, and *why* it must be so.[1]—*Art* is the habit of doing a complex operation easily and correctly; e.g. playing the piano.—*Reasoning* means passing from one thing known to another as yet unknown; inferring, concluding. Thus we may reason: Metals sink in water; but iron is a metal; therefore iron sinks in water.—*Right* (correct) means according to certain rules or laws. Logic is the art of thinking straight.

> Note that *right* (correct) is not the same as *true.* True is what agrees with reality; right is what agrees with a rule. A proposition is true when it enunciates what is so; e.g. Albany lies west of Boston. But reasoning is a process. Now a process is neither true nor false. It is right if done in accordance with rules; else it is wrong or incorrect.

2. Corollaries of This Definition:

a. Logic, being a *science,* teaches us how we must

[1] This is the meaning given to 'scientia' by Scholastics. It is derived from their axiom: *"Scientia est de universalibus."* In modern usage, 'science' may mean any or all of four things: a) the finding of *facts,* b) the establishing of *laws* or *classes,* c) *theories* to explain both facts and laws, d) the so-called scientific *method,* which proceeds chiefly by way of observation and experiment.

proceed in our reasonings, and why we must proceed so.

b. Logic, being also an *art*, supposes exercise, practice, unceasing drill in reasoning correctly. The study of logic is a waste of time unless reasoning correctly becomes a habit with us.

c. The material object of logic is reasoning; the formal object of logic is correctness.

3. Division

The ordinary process of reasoning consists in this that, two propositions being known, a third is derived (inferred) from them; e.g. all men are born in original sin; now John is a man; therefore he was born in original sin. Correctness in reasoning consists in joining three propositions so that, two being granted, the third must also be granted.

However, before we can be sure that our conclusion is true, we must make sure that we understand fully what the single propositions mean or imply. Hence logic treats not only of the reasoning process as such, but also of the nature of propositions, and determines the exact meaning of different kinds of propositions.

Moreover, to make sure that we understand the full import of the single propositions, we must be sure that we understand the parts of which they are made up. These parts are, in categorical propositions, called terms. Hence logic also treats of terms.

These two parts are, however, subsidiary and preparatory.

Lastly, the search for the truth is often very complicated and implies a long series of steps, as when we

want to find out what a certain chemical substance is. In this search we must be methodical. Logic also gives us a few general rules to be followed in the search of all truth.

Hence we shall divide this treatise into 4 parts:

1. **The Term**
2. **The Proposition**
3. **Reasoning**
4. **Method**

The author desires to call the teacher's attention to the following three points:

1. In the first chapters of Logic, the simple *syllogism* has been made the unifying theme as well as the ultimate aim. All discussion which did not advance this purpose, was relegated to the last part. On the other hand, the sentence or *proposition* has been made the starting-point of all explanations; the underlying principle is the well-known axiom that all truths are couched by us in sentence-form.

2. All merely *psychological* information has been excluded as far as possible.

Logic differs essentially from psychology. Logic deals primarily with the objective aspect of our intellectual processes, psychology with the subjective. No doubt, both aspects are present in every cognition and they may aid each other, but they must not be confused; else we have psychologism, the bane of present-day philosophy.

Nor—let it be added at once and emphatically—is epistemology a branch of psychology. Epistemology investigates the final cause of our faculties, psychology

the other causes. At the same time, there is no denying that a knowledge of what is today called 'experimental psychology' would be a decided advantage for the student; without such knowledge the force of many of the difficulties urged against our theses will hardly be grasped fully.

3. Logic is not only a science, but also an *art*. In fact, studying a text-book of logic is of little use unless the scholar acquires the life-long habit of reasoning correctly himself and of analyzing the arguments of others as to their soundness. For this purpose it seemed advisable to restrict the number of *precepts* to a minimum. Else, like David clad in the armor of Saul, the beginner is apt to be overwhelmed rather than helped.

Part I

THE TERM

The categorical proposition consists of two terms: the subject and the predicate. Thus if I say: man is mortal, the two terms 'man' and 'mortal' are joined by the verb 'to be.'

Now before pronouncing a proposition like this, I had already pronounced it in my mind, as it were. This internal act of the mind is called a judgment. It is only after formulating a judgment in our mind, that we utter it to those with whom we speak. To act otherwise, i.e. to talk before we think, would be silly.

But how do judgments come about in our minds? What do they *suppose* logically to have preceded in our mind?

A judgment supposes logically three things:

a. There must be *two ideas,* viz. the subject (S) and the predicate (P). That is to say, I must know what my subject stands for and what is meant by my predicate. How indeed could I pronounce the above judgment even in my mind, unless I knew beforehand what is meant by 'man' and what by 'mortal.'

b. But two ideas or terms juxtaposed do not make a judgment. The judgment further supposes a *comparison* between them, to see if they are to be joined or separated, to see if I ought to say that man is mortal, or that man is not mortal.

c. Lastly, the judgment supposes *insight* into the mutual relation between S and P. Else we judge blindly.

For the present, however, we are only concerned with the fact that the two terms of a proposition correspond to two ideas in the mind. Hence before considering terms proper, we shall first speak of ideas or concepts.

I. IDEAS

1. Definition of Idea

1. An idea or concept, considered subjectively, is an *act* of the mind by which we conceive something; considered objectively, it is *that which* we conceive by such an act.

Two important remarks:

a. Conceiving is not the same as seeing with our eyes or hearing with our ears; nor is it imagining. Conceiving is an act of the *intellect,* a spiritual faculty (as will be proved in psychology).

b. The two aspects, the subjective and the objective, are *essential* to every cognition. You cannot have one without the other—just as you cannot have a sale without a purchase. Cognition is something like a photo: the photo represents somebody, and somebody is represented. Still, it is impossible to give one definition that would cover both aspects; their natures differ too much.

2. Simple Apprehension

The act of conceiving something is also called a simple apprehension. It differs, however, slightly from the

idea. Simple apprehension is the process by which we acquire ideas or concepts; ideas or concepts are the product of such processes.

Three definitions of simple apprehension are current: a) It is the act of the mind by which we merely apprehend a thing, as when we learn what 'mortal' means by looking it up in the dictionary or by listening to the explanation of the teacher. b) It is the act of the mind by which we merely make an intellectual image of anything (Suarez). c) It is the act of the mind by which we learn the essence (definition) of a thing, as when I learn the definition of a circle.

We gain ideas by abstraction, reflexion, comparison, analysis, synthesis, reasoning, etc. But this pertains to psychology (Origin of Ideas). Anyhow, there is the scholastic axiom: "Nihil est in intellectu nisi quod prius fuerit aliquomodo in sensu."

3. Abstract and Universal Ideas

a. One property of our ideas (considered objectively) is that they are *abstract*. That is, our ideas represent the different objects *without the individuality* with which they are vested in reality. This is plain enough if we consider the predicates of our sentences. Thus I can say: Peter is a man, Paul is a man, John is a man. If my concept of 'man' included the individuality of Peter, I could not say that Paul is a man; for Paul has nothing of the individuality of Peter.

As a result, an idea expresses one thing common to many, *one thing in many,* viz. so that it can be predicated of each of them. Thus that which I conceive

when I conceive 'man,' is common to Peter, Paul, John etc., in fact to *all* men, whether past, present or future. 'Man' therefore is called a *universal* idea.

b. *Direct* and *reflex* universal

The direct universal is something common to many, but not conceived as such. The reflex universal is something common to many and conceived as such. Thus I may merely know what 'man' is (viz. a rational animal) without realizing that it can be predicated of many; in that case, my concept of 'man' is called a direct universal. But if I also conceive 'man' as capable of being predicated of Peter, Paul, John etc., my concept is a reflex universal.

4. Comprehension and Extension of Ideas

The comprehension of an idea is the sum-total of the notes which constitute the (objective) idea; e.g. the concept of 'man' is made up of 'animal' and 'rational.' The extension of an idea is the sum-total of the things of which that idea can be predicated; the extension of 'man' are all men.

Rule: The greater the comprehension of an idea, the less its extension—and vice versa.

2. Division of Ideas

1. As regards comprehension:

A *simple* idea contains only one note, i.e. it cannot be further analyzed or reduced to simpler concepts. Such are the concepts of being, substance, essence etc.—A *composite* idea contains several notes. Thus the con-

cept of man contains the following notes: rational, sentient, living, substance etc.

2. As regards extension:

a. A *universal* idea is one which can be predicated of all of a class; e.g. man can be predicated of every individual man.

b. A *particular* idea is a universal idea restricted to an indefinite part of its extension; e.g. some man, some men.

c. A *singular* idea expresses a definite individual; e.g. Peter, this book, the house in which I live.

d. A *collective* idea expresses many together; e.g. a family, an army, a crowd.—Note that a collective idea may again be universal or particular or singular; e.g. family, some family, this family.

3. If extension and comprehension vary inversely according to the above rule, we must at last come to concepts which are both widest in extension and least in comprehension. Which are they? Aristotle enumerated 10 of them: substance, quantity and quality, relation, action and passion, where and when, posture and environment. They are called the *10 categories* or *predicaments.*

Still wider, however, than any of these and yet covering them all is the concept of *being* (thing, something) with its attributes of unity, truth and goodness. These concepts are called *transcendental,* because, being implicitly contained in the concepts of all 10 categories, they transcend them all.

The discussion of the peculiar nature of all these

concepts forms the subject-matter of that part of philosophy which is called "general metaphysics."

3. Relation of Ideas

There may, of course, be various kinds of relations between ideas. But in the categorical proposition, the model-form of our sentences, we consider only two: *identity* and *diversity*. We say either 'is' or 'is not.' By the former we express identity between S and P, by the latter diversity.

However, both identity and diversity may be either formal or objective.

Two ideas are *formally* identical or diverse, according as they have the same notes (comprehension) or not. Two ideas are *objectively* identical or diverse, according as they are found in the same individual or not.

Moreover, both identity and diversity may be *complete* or *partial*. Thus between 'man' and 'rational animal' there exists formal and complete identity; but between 'man' and 'animal' the identity is indeed formal, but only partial. The identity between 'Peter' and 'white' is objective and partial.

II. TERMS

1. Definition of Terms

Terms are the parts which immediately constitute a simple proposition. In the categorical proposition, they are S and P.

Terms are words, and signify something. By them we ordinarily manifest our thoughts to others. Hence

it is customary with logicians to insert here a few remarks about signs, words, speech.

1. A *sign* is something which leads us to know something else; e.g. the wooden Indian before a cigar store. There are various kinds of signs:

a. A *natural* sign is one which signifies something else by its very nature; e.g. a groan signifies pain; a blush signifies shame etc.—An *arbitrary* sign is one which signifies through the free institution of man or God; e.g. the flag signifies the country.[1]

b. Some signs merely indicate the existence of something else; thus the wooden Indian. Other signs stand for the thing signified; e.g. the keys of the city, which were handed over to the conqueror.

2. A *word* is an articulate sound signifying something.—*Speech* is a connected series of words.

Though speech is natural to man, yet the words used are *arbitrary* signs: else there would be no difficulty in understanding a foreign language. Moreover, words indicate the existence of the corresponding idea, but they stand for the things themselves. As Suarez says: The teacher uses words, because he cannot take the things themselves into the schoolroom.

2. Division of Terms

1. As regards comprehension:

A *simple* term consists of only one word (article not counted). A *complex* term consists of more than one word; e.g. the book I gave you.

[1]There are also signs which are partly natural and partly arbitrary; e.g. the sacraments.

A complex term contains two parts: a *subject* and its *modifier*. The modifier either restricts the extension of the subject (e.g. the book I gave you), or it merely explains the subject without restricting its extension (e.g. mortal man).

2. As regards extension:

A *common* term is the name (word) applicable to each of a group of individuals; e.g. tree, man.—A *proper* term is the name proper to an individual; e.g. Julius Caesar.

A common term may or may not be modified. If it is not modified it is called an *indefinite* term, because its extension is not at once evident; e.g. tree, a tree, the tree. If it is modified, we have:

a. *Universal* terms: e.g. all men, every man, no man, nobody.

b. *Particular* terms: e.g. some man, some men, somebody.

c. *Singular* terms: e.g. this man, the man I saw yesterday.

d. *Collective* terms: all men together.

3. As regards definiteness of meaning:

A *univocal* term is predicated of many in exactly the same sense; as when I say: Peter is a man; Paul is a man. The term 'man' is used in exactly the same sense in both propositions.—An *equivocal* term is predicated of many in an entirely different sense; as when I say: the robin is a bird; Peter is a bird; the term 'bird' is used in meanings altogether different. — Lastly, an *analogous* term is predicated of many in a sense partly

the same and partly different; as when we speak of the foot of a man and the foot of a mountain.

Almost any word may be used univocally or equivocally or analogously. Hence if asked whether a certain word is one or the other, first inquire of which things it is predicated. Thus the word 'bird' is predicated univocally of a robin and a sparrow.

3. Supposition of Terms

1. Definition

The supposition of a term is the *definite meaning* which a given term has in a given proposition.

Every term, even when used univocally, may be taken in various meanings (as will appear presently from the divisions). Now, in reasoning we want to arrive at a very definite conclusion; but this is impossible unless each proposition and each term has an absolutely definite meaning. Besides, each term occurs twice in the regular process of reasoning (as we shall see), and we must be very careful to use it both times in the same sense; else the whole process of reasoning is vitiated.

Hence the exceeding importance of this (difficult) chapter.

2. Divisions

There are first of all two divisions of supposition, which, however, rarely mislead one, because the change from one to the other would be too glaring. a) A term may be taken in its *proper* sense or *metaphorically*. Thus if I were to argue: All birds have feathers; but Peter is a bird; therefore Peter has feathers: the term

'bird' would be used once in its proper sense and once metaphorically. b) A term may be taken *materially* (i.e. for the word itself) or *formally* (i.e. for that which it signifies). Thus when I say: Cicero is a word of three syllables, I use 'Cicero' in the material supposition; but when I say: Cicero was a great orator, I use it in the formal supposition.

The following divisions refer to proper and formal supposition only. They are of greater importance for logic, because the danger of changing inadvertently from one to the other is greater.

a. *Real* and *logical* supposition:

A term is said to have real supposition if used for the thing as it is in itself; e.g. Peter is a man; man is an animal.—A term is said to have logical supposition if used for the thing as it can only be in the mind; e.g. man is a species.

The further divisions refer only to real supposition.

b. The supposition of a term is *absolute* or *personal*, according as it refers to the comprehension or extension. The choice often depends on the intention of the speaker. If he attends to the notes contained in the idea expressed by the term, he uses the term in absolute supposition; if he attends to the individuals of which the term may be predicated, he uses it in personal supposition.

> Note that the expression 'personal' is a trifle misleading. Also terms which do not refer to persons at all, may be used in personal supposition; e.g. all trees, all horses.

c. Personal supposition of common terms:

A common term, when used in personal supposition,

either stands for all its inferiors or for only a part of them. In the former case, the supposition is called *universal*, in the latter *particular*. Modifiers indicating universal supposition are: all, every, any, each, none; e.g. all men are mortal; no metal has life. Modifiers indicating particular supposition are: some, a or an; e.g. some men are deceitful; a man was shot.

d. Lastly, both universal and particular supposition may be subdivided:

A term with universal supposition may be used either *distributively* or *collectively*, according as it stands for each single individual or for all together; e.g. all men are mortal; all men (together) are one species.

A term which has particular supposition, may stand either for a definite or an indefinite part of its inferiors; e.g. a train was wrecked; a train is necessary to get to New York.[1]

Compare the meanings which the word *'universal'* has, according as it refers to a concept, a term, or the supposition.

[1]The word *'God,'* when it stands for all three Persons, has a quasi-universal supposition; e.g. God is all-wise. But if it stands for only one of the three Persons, it has a quasi-particular supposition; e.g. God died for us.

Part 2

THE PROPOSITION

1. Definitions

a. A proposition is a *complete assertion;* e.g. John is an engineer; baseball is a major sport. An incomplete assertion is one which does not make complete sense; e.g. while John was asleep.

Logic only deals with assertions. It does not treat of sentences which express a wish (e.g. if you only had been here), a command (e.g. go at once), a question (e.g. where is John), an exclamation (e.g. what a glorious sunset) etc. The reason for it is this. The material object of logic is reasoning; now reasoning is a purely intellectual process, whereas wishes, commands etc., contain emotions and affections of the will, which are wholly outside the sphere of logic.

b. The proposition may also be defined as the *external manifestation of a judgment.*

The judgment, taken subjectively, is an act of the mind by which we affirm or deny something; e.g. man is mortal; this book is not mine. The judgment, taken objectively, is something which can be affirmed or denied (which is true or false); it may also be defined as the *relation existing between two terms.*

2. Division

That which is affirmed or denied in a judgment, is always a *relation* between two (objective) ideas. But

this relation may be a) one of identity or diversity, b) some other relation, especially one of dependence. Accordingly, logicians divide judgments and propositions into two principal classes: categorical and hypothetical.

CHAPTER 1

The Categorical Proposition

I. DEFINITION

A categorical proposition is one which asserts the *identity* (or *diversity)* of two objective concepts. The identity (or diversity) asserted may be either formal or merely objective, complete or partial. In definitions, it is always formal.

A categorical proposition contains *3 elements:* a) the subject, i.e. that of which something is asserted; b) the predicate, i.e. that which is asserted of the subject; c) the copula, which expresses the relation between S and P.

The Scholastics call S and P the *matter* of the proposition, while the copula is the *form.*

In a strictly logical proposition, the copula is always the verb *'to be'* in the *present* tense and in the *indicative* mood. The reason is that this alone expresses identity (or diversity) and nothing else. Hence, if in reasoning a proposition occurs which is not made in this manner, we must first change it into one which clearly contains the three elements; e.g. Peter walks = Peter is walking; Cæsar defeated the Gauls = Cæsar is one who defeated the Gauls. As is clear from these examples, this same process is necessary to know what precisely

is the predicate (P). Thus in the proposition "Peter walks" the predicate is not 'walks,' but 'walking.'

> In every-day usage, we often employ the verb 'to be' where it does not express mere identity, but implies some *further* relation between two concepts. Thus when we say that "two times two is four," the verb 'is' really means 'is equal to,' 'is equivalent to.' The same holds for algebraic formulas. Likewise, when the chemist says that salt is NaCl, he means that salt originates out of Na and Cl and may again be decomposed into them; if he meant to express pure identity, he would go beyond his evidence.

Logical Use of Propositions:

In the process of reasoning, as standardized by Aristotle and the Scholastics, attention is chiefly paid to two things: a) the *extension* of the *terms* employed; b) the *quality* and *quantity* of the *propositions*. Hence this chapter is of fundamental importance in logic.

a. The *quality* of a proposition depends on its copula. A proposition is affirmative or negative, according as the copula is 'is' or 'is not.'

Moreover, from the quality of a proposition we can figure out the extension of its *predicate*. To wit: a) the predicate of an affirmative proposition has *particular* supposition (except in complete definitions, in which P is universal); b) the predicate of a negative proposition has *universal* (distributive) supposition.

b. The *quantity* of a proposition depends on the extension of its subject. A proposition is singular, if its subject is a singular or proper term; e.g. this man is a crook; Peter died.—A proposition is universal, if

its subject is a universal term; e.g. all men are mortal. —A proposition is particular, if its subject is a particular term; e.g. a train was wrecked.

c. Combining the two aspects of quality and quantity, the Scholastics designated the various propositions as follows:

A universal affirmative proposition: all, every, each.

E universal negative proposition: no, none, nobody.

I particular affirmative proposition: some, somebody.

O particular negative proposition: some—not.

II. DIVISIONS

At times, propositions contain more than one complete assertion. Now, in order to make sure that our reasoning is correct, we must know how many complete assertions are contained in the various kinds of propositions. For this reason, we shall examine them one by one.

A *simple* proposition is one in which none of the elements is modified, i.e. in which S and P are simple terms, and the copula is 'is' or 'is not.' Such a proposition evidently contains only one assertion.

Other propositions are: complex, compound, modal. These must be examined in detail.

1. Complex Propositions

A complex proposition is one in which the subject or the predicate or both are complex terms; e.g. the book I gave you is a novel by Isabel Clark.

Now a complex term, as we saw, consists of two parts: the subject and its modifier; moreover, the modifier may be restrictive or explanatory. Hence the following division:

a. A *restrictive* proposition is one whose subject is a common term restricted to a definite part of its extension; e.g. the book I gave you is a novel.—This is really a single assertion.

b. An *explicative* proposition is one whose subject is a common term modified by an explanation; e.g. mortal man is subject to many ills.—This is really equivalent to two assertions: a) man is mortal; b) man is subject to many ills.

This last example shows us what the Scholastics mean by *distinguishing* a proposition. A distinction brings out the two assertions contained in an apparently simple assertion which seems half true and half false. The distinction grants the part which is true, but denies the part which is false. Apply this also to the following divisions.

2. Compound Propositions

A compound proposition is one which contains several subjects or several predicates. Accordingly, a compound proposition contains really several assertions. But this may be more or less obvious; hence logicians divide compound propositions into two principal classes:

1. Propositions in which the composition is *obvious:*

a. A *copulative* proposition is one in which several subjects or predicates are joined by 'and' or 'neither—

nor': Peter and Paul died; neither Peter nor Paul died.

b. An *adversative* proposition is one in which several subjects or predicates are joined by 'but'; e.g. Cicero was an orator, but no statesman.

Both copulative and adversative propositions contain as many assertions as there are elements joined.

2. Propositions in which the composition is *less obvious:*

a. An *exclusive* proposition is one in which S or P is modified by 'only,' 'alone' etc.; e.g. God alone is omnipotent; John is only an engineer.

Exclusive propositions, though apparently simple, really contain two assertions: one affirmative, the other negative; e.g. God alone is omnipotent = God is omnipotent, and no other being is omnipotent; John is only an engineer = John is an engineer, and he is nothing else.

b. An *exceptive* proposition is one in which the subject is modified by 'except,' 'with the exception of' etc.; e.g. all animals, except man, are irrational.

Exceptive propositions contain two assertions: one negative, the other affirmative; e.g. all animals, except man, are irrational = a) man is not irrational, b) all other animals are irrational.

c. A *comparative* proposition is one in which the predicate is affirmed (or denied) of one subject in a greater or lesser degree than of another; e.g. Plato is wiser than Socrates.—Another form of the comparative proposition is the one in which the predicate is affirmed

(or denied) of both subjects in the same degree; e.g. Plato is as wise as Socrates.

A comparative proposition really contains three assertions; e.g. Plato is wiser than Socrates = a) Plato is wise, b) Socrates is wise, c) the wisdom of Plato is greater than that of Socrates. Ordinarily, however, the first two are understood, or else the proposition is silly. Comparative propositions may then be regarded as *simple*.

3. Modal Propositions

A modal proposition is one which distinctly enunciates what *kind* of identity (or diversity) there is between S and P. There are 4 such modes: necessary, contingent, possible, impossible. *Necessary* is that which cannot be otherwise (must be so); e.g. God is necessarily just.—*Contingent* is that which can be otherwise; e.g. the world exists contingently.—*Possible* is that which can be; e.g. it is possible for Peter to fall.—*Impossible* is that which cannot be; e.g. it is impossible for water to flow uphill.

> A proposition, to be modal, must enunciate the mode distinctly and *explicitly*. But this may be done in various ways; e.g. it is necessary that God be just—God is necessarily just—it is necessary for God to be just—God cannot but be just etc.

Quality and *Quantity* of Modal Propositions:

A modal proposition is *affirmative* or *negative* according as the mode is affirmed or denied; e.g. it is impossible for a square to be round; it is not impossible that the world be annihilated.—A modal proposition

whose mode is either 'necessary' or 'impossible' is considered as a *universal* proposition, because it is true for all and always.—A modal proposition whose mode is 'contingent' or 'possible' is considered as a *particular* proposition.

Number of Assertions: A modal proposition consists of two assertions, unless the mode be 'possible.' In the latter case, it contains only one assertion.

CHAPTER 2

The Hypothetical Proposition

I. DEFINITION

A hypothetical proposition is one between the parts of which there exists a relation of *dependence, opposition, likeness* etc.

Therefore hypothetical propositions differ from categorical both in matter and form. a) The *matter* of a hypothetical proposition is not S and P, but the parts between which such a relation is asserted. b) The *form* is not identity or diversity expressed by the copula, but some other relation indicated by the conjunctive particles.

The hypothetical proposition as such contains *only one* assertion.

II. DIVISIONS

1. A *conditional* proposition is one in which two parts are joined by 'if,' 'unless' etc.; e.g. if it had rained last night, the road would be wet; unless his temperature goes down, he will die.

The part introduced by 'if' is called the *antecedent,* the other part the *consequent.* Hence the conditional proposition may also be defined as one which asserts the dependence of consequent upon antecedent.

This dependence is always *logical,* i.e. we always pass from the antecedent to the consequent in our

thought and speech. But sometimes it is merely logical, at other times it is also *real,* i.e. when the consequent depends on the antecedent in reality. Thus if I say: If the ground is wet, it must have rained—the dependence of the consequent on the antecedent is purely logical. But if I say: If it had rained, the ground would be wet—the dependence is also real.

2. A *disjunctive* proposition is one in which the subject or the predicate consists of parts which exclude each other; e.g. either Christ or Pilate erred; the earth is either at rest or in motion.

3. A *conjunctive* proposition is one which denies that two predicates together can be true of the same subject (at the same time); e.g. you cannot serve God and mammon; you cannot eat your cake and have it.[1]

4. A *relative* proposition is one in which two parts are joined by 'as—so,' 'where—there' etc.; e.g. as we live, so we shall die; where your treasure is, there also is your heart.

[1]This as well as the disjunctive proposition is rather a combination of hypothetical and categorical proposition.

Part 3

REASONING

The process of reasoning consists in this that we pass (mentally) from one thing to another, from one proposition to another, from what is known to what is unknown. Thus from the existence of this world we may reason to the existence of God; from our actions we reason to the freedom of the will etc.

As before, so in reasoning we must distinguish between a) the process of the mind and its external manifestation in speech, b) between the subjective and the objective aspect of the mental process. Logic considers primarily the process of the mind and its objective aspect.

Here begins logic proper. For it is precisely the purpose of logic to insure *correctness* in the process of reasoning, to guard us against making false steps.

There are two ways of passing from one proposition to another: either without or with the aid of a third proposition. Hence the usual division into immediate and mediate inference.

CHAPTER 1

Immediate Inference

Immediate inference, considered subjectively, is a process of the mind by which we pass from one proposition to another without the aid of a third. Objectively considered, it is the connection existing between two such propositions.

We often proceed in this manner in daily life. Thus if we know that John was in Buffalo at a specified time, we immediately infer that he was not in Boston at the same time. Logic, however, considers only such pairs of propositions in which the terms are the *same*.

There are various ways of passing thus immediately from one proposition to another. We shall consider three: Opposition, Conversion, Possibility and Existence.

I. OPPOSITION

1. Definition

Opposition exists between two propositions which, having the same terms, differ in quantity or quality or both.

> The terms of both propositions must also have the same *supposition*. But common terms, when used in personal supposition, need not have the same extension (as will be clear from the divisions).

2. Division

a. *Contradictory* opposition exists between two propositions which differ in quantity and quality; e.g. all men are white—some man is not white.

Such opposition exists between A and O, between E and I.

> Contradictory opposition in the strict sense of the word exists between two propositions one of which asserts just enough to destroy the other (neither more nor less); e.g. all men are white—some man is not white.
>
> No such contradictory opposition exists between the following pairs: a) All men are white—no man is white; b) all men are white—some men are not white; c) all men are white—Peter is not white. The last two pairs are often called contradictories in a wider sense.

b. *Contrary* opposition exists between two universal propositions which differ in quality; e.g. all men are white—no man is white.

Such opposition exists between A and E.

c. *Subaltern* opposition exists between two propositions which differ only in quantity; e.g. all men are white—some man is white; no man is white—some man is not white.

Such opposition exists between A and I, between E and O.

d. *Subcontrary* opposition exists between two particular propositions which differ in quality; e.g. some man is white—some man is not white.

Such opposition exists between I and O.

Square of Opposition

3. Laws of Inference

a. Two (strictly) *contradictory* propositions can neither be true nor false together. Hence if one of them is true, I can at once infer that the other is false —and vice versa.

b. Two *contrary* propositions cannot be true together, but they may both be false. Hence if one of them is true, I can at once infer that the other is false —but not vice versa.

c. As regards *subaltern* propositions: a) If the universal proposition is true, the particular is also true —but not vice versa; b) if the particular proposition is false, the universal is also false—but not vice versa.

d. As regards *subcontrary* propositions: If one is false, the other is true—but not vice versa.

FINDING THE CONTRADICTORY:

As is clear from a comparison of the laws given above, contradictory opposition offers the widest range of immediate inference. Hence such inferences are very common among philosophers. However, it is not always easy to *find* the strict contradictory of a given proposition. The rule given above is very general; but there are some *special cases* to be considered:

a. The contradictory of a *singular* proposition is formed by merely changing the quality; e.g. Peter is sick—Peter is not sick; this as a drama—this is no drama. In like manner is formed the contradictory of a proposition whose subject has either *logical* or *absolute* supposition; e.g. man is a species—man is not a species; brute animals have no intellect—brute animals have intellect.

b. As regards *complex* and *compound* propositions which contain more than one assertion: Deny disjunctively all single assertions; e.g. Peter and Paul died —either Peter or Paul did not die.

c. As regards *modal* propositions: Change the mode to its opposite, viz. 'necessary' to 'contingent' or vice versa, 'possible' to 'impossible' or vice versa.

d. As regards *hypothetical* propositions: Deny the relation asserted; e.g. if it had rained, the road would be wet—even if it had rained, the road would not be wet.

However, a) in denying a *disjunctive* proposition, we affirm a third possibility; e.g. Peter either sits or walks —Peter may neither sit nor walk. b) For *conjunctive* propositions, change 'nobody' to 'somebody'; e.g. nobody can serve God and mammon—somebody can serve God and mammon.

II. CONVERSION

1. Definition

Conversion is the process by which we transpose the subject and predicate of a proposition without changing its truth. That is, instead of saying S is P, we say

P is S. As for instance: No man is a lion—no lion is a man.

"Without changing its truth" means that the new proposition may not assert *more* than did the one we began with. Or, to use logical terminology: the extension which a term had as S or P, may not be *increased* through the process of conversion. Or again: if a term was particular before the process of conversion, it must not become universal (distributive) through the process. Thus "all geniuses have big skulls" may not be converted into "all who have big skulls, are geniuses."

Never convert a proposition unless you have first reduced it to its logical form, i.e. with the copula inserted *explicitly*.

2. Division

a. *Simple conversion:* S and P are transposed without change of the extension of either; e.g. no man is a lion—no lion is a man; some boys are clever—some who are clever, are boys.

Only E and I propositions can be converted simply. However, simple conversion may be resorted to in case of A propositions which express complete definitions; e.g. all men are rational animals—all rational animals are men.

b. *Accidental conversion:* S and P are transposed, but the extension of one is lessened; e.g. all lawyers are men—some men are lawyers.

Such conversion is allowed in A and E propositions.[1]

[1] Scholastics also mention a third kind of conversion. We omit it because it is of no practical value.

III. POSSIBILITY AND EXISTENCE

1. The following inferences can be drawn immediately: a) if a thing exists, it is possible; b) if a thing is impossible, it does not exist. Thus soul and body are joined in man; therefore they can be joined. On the other hand, a square circle is impossible; therefore it does not exist anywhere.

2. But we cannot infer immediately that a) if a thing can be, it exists, or b) if a thing does not exist, it cannot exist. Thus another world is possible, no doubt; but from this we cannot argue immediately that it does exist. On the other hand, our earth has only one moon; but from this I cannot immediately infer that another moon is impossible.

3. The Scholastics expressed these 4 rules thus:

a. Ab esse valet illatio ad posse.
b. A non posse valet illatio ad non esse.
c. A posse non valet illatio ad esse.
d. A non esse non valet illatio ad non posse.

CHAPTER 2

Mediate Inference

Mediate inference (reasoning in the strict sense of the word), considered subjectively, is that process of the mind by which we pass from one proposition to another with the aid of a third. Objectively, it is the connection between three such propositions.

The most perfect form of mediate inference is the *syllogism,* in which the propositions are so arranged that the connection between them becomes immediately evident. It is this we are going to study.

> In every-day life, we rarely reason in complete syllogisms; but the result is that we often make mistakes, unless the inference is easy and obvious. It is precisely the purpose of logic to lay down such rules as will guard us against mistakes in reasoning.

There are two kinds of syllogisms: categorical and hypothetical. The categorical syllogism consists of three categorical propositions; the hypothetical syllogism has a hypothetical proposition for its major premise, though the other two propositions are, as a rule, categorical.

The principal kind is, of course, the categorical syllogism; Aristotle, the founder of scientific logic, does not even discuss the other.

I. THE CATEGORICAL SYLLOGISM

1. Its Nature and Properties

1. Definition

The categorical syllogism is a process of the mind by which we learn the identity or diversity of two

objective concepts by comparing them both successively with a third.

Example: All men are mortal.
Now Peter is a man.
Therefore Peter is mortal.

Explanation: In every categorical judgment we assert the identity or diversity of two objective ideas. But, as we saw above, before the assertion is made, we *compare* the two ideas with each other to see if they are or are not identical. Only after and because we have by such comparison gained an *insight* into their mutual relation, do we judge.

Now, sometimes we gain this insight by merely considering S and P; as e.g. the whole is greater than its part; this tree is green. These are called *immediate* judgments. At other times, things are not so simple. Even after maturely considering S and P we may be unable to see their mutual relation. It is then that we employ a third idea, a *middle term,* and thus hope to arrive at a conclusion. Judgments that come about in this manner, are called *mediate.*

In the above example, for instance, the question is to learn whether Peter is mortal or not. Let us suppose that we cannot settle the question by merely considering S and P, viz. 'Peter' and 'mortal.' We then take a third idea, viz. 'man,' and compare both S and P with it successively. Thus we arrive at our conclusion. (How to find the *right* idea, i.e. one that will help toward the desired conclusion, is a special chapter.)

2. Matter and Form

a. The *remote matter* of the categorical syllogism are 3 ideas or terms: S, P and M (the middle term).— The *proximate matter* are 3 propositions: two premises, in which S and P are separately compared with M, and the conclusion, in which the relation seen to exist between S and P is asserted. The first premise is called the *major premise,* the second the *minor;* both together are called the *antecedent.* The conclusion is also called the *consequent.*

b. The *form* of every syllogism is the *consequence,* i.e. such a connection between premises and conclusion that if the premises are granted, the conclusion is also to be granted. *(How* they must be connected, will be explained graphically under 'figures' and 'moods'.)

3. Conclusion and Consequence

a. From the above it is evident that conclusion and consequence are not the same. The conclusion is a proposition, the consequence is a certain connection between propositions. The conclusion is the goal at which we arrive, the consequence is the correct process of arriving at the goal. The conclusion is either true or false, the consequence is either right or wrong.

b. Nevertheless, the conclusion is not a mere proposition, but a proposition *as derived* from premises. Hence it may be considered under two aspects: a) as a proposition, and as such it is true or false; b) as derived from the premises, and then it may also be called correct or incorrect.

Hence, if the conclusion be considered under both

aspects, it may be a) correct and true, or b) correct and false, or c) incorrect and true, or d) incorrect and false.

Examples: All men are mortal.
Now Peter is a man.
Therefore Peter is mortal.
(Correct and true)

All men are angels.
Now Peter is a man.
Therefore Peter is an angel.
(Correct, but false)

All birds have feet.
Now Peter is no bird.
Therefore Peter has feet.
(Incorrect, but true)

All birds have wings.
Now Peter is no bird.
Therefore Peter has wings.
(Incorrect and false)

4. Principles Concerning the Truth

Of course, the aim of all our studies is to arrive at conclusions which are both correct and true. The particular aim of logic is to aid us in arriving at *correct* conclusions. Of itself, it is not concerned with the truth of conclusions. Still, supposing that the process of reasoning is correct, the following principles may be laid down concerning the relation between the truth of premises and conclusions:

a. If the antecedent is true, the conclusion must also be true.

b. If the antecedent is false, the conclusion may be true or false.

c. If the conclusion is true, the antecedent may be true or false.

d. If the conclusion is false, the antecedent must be false.

2. Rules of the Categorical Syllogism

a. *Concerning the Terms (S, P, M)*

1. No syllogism may contain more than three terms (ideas). The reason for this rule is evident from the definition of the categorical syllogism, which consists in this that two ideas are successively compared with the same third.

Therefore no syllogism may have 4 terms. Now there are also 4 terms when a word is used in two different *meanings;* e.g. all birds have wings; now Peter is a bird; therefore Peter has wings. This is wrong, because M is used in two different meanings.

2. No term may have a greater extension in the conclusion than it had in the premises. In other words, if S or P are particular in the premises, they cannot become universal in the conclusion. For, what is true of the particular, is not necessarily true of the universal; e.g. if some men are white, it does not follow that all men are white.

3. The middle term may not occur in the conclusion. For the middle term is only a stepping-stone, a scaffolding to help in erecting the building. What we want to know, is the identity or diversity of S and P.

4. The middle term must at least once have universal (distributive) supposition. Otherwise we

cannot be sure that we compare S and P with the *same* M.

This is by far the most important rule. Practically it means that the major premise must be *universal.*

b. *Concerning the Propositions (A, E, I, O)*

5. If both premises are affirmative, the conclusion, too, must be affirmative.

Proof: If both premises are affirmative, S and P are *identical* with M. We must conclude then that they are identical among themselves. But identity is expressed by affirmation ('is'). Therefore, if both premises are affirmative, the conclusion cannot be negative.

6. If either premise is negative, the conclusion, too, must be negative.

Proof: If either premise is negative, then either S or P *differs* from M. Therefore S and P must differ among themselves. Now difference is expressed by a negative proposition ('is not').

7. If either premise is particular, the conclusion, too, must be particular. For otherwise S would have greater extension in the conclusion than in the premises (against Rule 2).

8. Nothing follows from two negative or particular premises.

Proof: a. If both premises are *negative,* they assert that neither S nor P is identical with M. But that tells us nothing whatever about the relation which exists

between S and P.—To illustrate: If I have only a 6-foot measure, and I find that it fits neither Peter nor Paul, I do not know whether Peter and Paul are equally tall or not.

b. If both premises are *particular,* either both are affirmative or both are negative or one is affirmative and the other negative. Now a) if both are affirmative, all terms will be particular (against Rule 4). b) If both are negative, there is no conclusion at all (first part of Rule 8). c) If one premise is affirmative, the other negative, the conclusion would have to be negative (Rule 6). That means that P would have to be a universal term in the conclusion, and hence also in the premises (Rule 2). But M must also be universal, at least once (Rule 4). Now under the conditions assumed, there is room for only one universal term. Therefore no syllogism is possible with two particular premises.

3. Figures

The figure of a syllogism is the proper arrangement of M. ('Proper' means so that the right conclusion necessarily follows from the premises.)

There are *3 figures:*

M — P	P — M	M — P
S — M	S — M	M — S
S — P	S — P	S — P

In other words: In the first figure, M is the subject in the major and predicate in the minor; in the second

figure, M is predicate in both premises; in the third figure, M is subject in both premises.

Special Rules for the Figures

1. For the First Figure:

The minor must be affirmative, the major universal.

Proof: a. If the minor in the first figure were negative, the conclusion would also have to be negative (Rule 6). Then P would be universal in the conclusion, and therefore would also have to be universal in the major (Rule 2). But that could only be if the major, too, were negative. Therefore, if the minor in the first figure were negative, both premises would be negative (against Rule 8).

b. If the major in the first figure were particular, M would be particular in the major. Now M must be particular in the minor, by the first part of this rule. Therefore if the major in the first figure were particular, M would be twice particular (against Rule 4).

2. For the Second Figure:

One premise must be negative, the major universal.

Proof: a. If neither premise were negative, M would be twice particular (against Rule 4).

b. Seeing that one premise must be negative, the conclusion, too, will be negative (Rule 6). Then P will be universal in the conclusion, and consequently must be universal in the major (Rule 2).

3. For the Third Figure:

The minor must be affirmative, the conclusion particular.

Proof: a. The same as in the first figure.

b. If the minor is affirmative, S will be particular in the premises; therefore it cannot be universal in the conclusion (Rule 2).

4. Moods

The mood of a syllogism is the proper arrangement of the premises according to quantity and quality.

Therefore, as the figure of a syllogism refers to the place which M must occupy—so the moods refer to the propositions; not to their place (which is settled by the figures), but to their *quantity* and *quality*. In other words, the moods of the syllogism tell us whether the premises are to be universal or particular, affirmative or negative.

There are 14 legitimate moods. Scholastics designated them by words, the vowels of which indicate the nature of the premise (see p. 26):

First Figure: Barbara, Celarent, Darii, Ferio.

Second Figure: Cesare, Camestres, Festino, Baroco.

Third Figure: Darapti, Felapton, Disamis, Datisi, Bocardo, Ferison.

> The practical advantage of the figures and moods lies in this that they visibly express the 8 general rules of the syllogism and that they supply us with an easy means of examining any categorical syllogism as to its correctness.

Examples of Moods and Figures

First Figure

BARBARA	CELARENT
All men are rational.	No man is without a soul.
All negroes are men.	All Indians are men.
All negroes are rational.	No Indian is without a soul.

DARII

All dogs bark.
Fido is a dog
Fido barks.

FERIO

No man is a lion.
Some animals are men.
Some animals are not lions.

Second Figure

CESARE

No dog has wings.
All turkeys have wings.
No turkey is a dog.

CAMESTRES

All men are rational.
No monkey is rational.
No monkey is a man.

FESTINO

No plant feels.
Some fish feels.
Some fish is not a plant.

BAROCO

All fishes can swim.
Some birds cannot swim.
Some birds are not fishes.

Third Figure

DARAPTI

All men are rational.
All men are animals.
Some animals are rational.

FELAPTON

No man is a lion.
All men are animals.
Some animals are not lions.

DISAMIS

Some lawyers are crafty.
All lawyers are men.
Some men are crafty.

DATISI

All lawyers are men.
Some lawyers are crafty.
Some men are crafty.

BOCARDO

Some horses are not useful.
All horses are animals.
Some animals are not useful.

FERISON

No dog has wings.
Some dogs are collies.
Some collies have no wings.

II. THE HYPOTHETICAL SYLLOGISM

1. The Conditional Syllogism

A conditional syllogism is one whose major is a conditional proposition; e.g. if the patient sleeps, he will recover; now he sleeps; therefore he will recover.

(Note that both the minor and the conclusion are categorical propositions.)

The conditional syllogism has *two moods:*

a. If the antecedent is granted in the minor, the consequent is to be granted in the conclusion (as in the above example).

b. If the consequent is denied in the minor, the antecedent is to be denied in the conclusion; e.g. if it had rained, the road would be wet; now the road is not wet; therefore it did not rain.

> The so-called *"fallacy of the consequent"* consists in mixing up the two moods, i.e. either a) first granting the consequent and then the antecedent, or b) first denying the antecedent and then the consequent.

2. The Disjunctive Syllogism

A disjunctive syllogism is one whose major is a disjunctive proposition; e.g. either Christ or Pilate erred; now Christ did not err; therefore Pilate erred. (Note again that both the minor and the conclusion are categorical propositions.)

The disjunctive syllogism has *two moods:*

a. Affirm one part of the disjunction in the minor and deny the other in the conclusion; e.g. the earth is either at rest or in motion; now the earth is in motion; therefore it is not at rest.

b. Deny one part of the disjunction in the minor and affirm the other in the conclusion; e.g. the earth is either at rest or in motion; now the earth is not at rest; therefore it is in motion.

The Dilemma

Like the disjunctive syllogism, the dilemma also starts with a disjunctive proposition; its two parts are then called the 'horns' of the dilemma. But the dilemma proceeds differently from the disjunctive syllogism. Its *minor* shows that, no matter which horn the opponent chooses, he is wrong Thus Our Lord, when rebuking the soldier who had struck him, argued thus: I have spoken either right or wrong; if I have spoken right, why strikest thou me? If I spoke wrong, prove it.

3. The Conjunctive Syllogism

A conjunctive syllogism is one whose major is a conjunctive proposition.

There is only *one mood:* Affirm one member in the minor and deny the other in the conclusion; e.g. nobody can read and sleep at the same time; now Peter sleeps; therefore he does not read.

III. OTHER FORMS OF INFERENCE

1. An *enthymeme* is a syllogism in which either one of the premises or the conclusion is omitted; e.g. God is holy; therefore He hates sin. Here the major is omitted: Whoever is holy, hates sin; or: if God is holy, He hates sin.

The enthymeme therefore differs from immediate inference; the former contains *three* terms fully stated, the latter only two.

2. A *polysyllogism* or *chain of reasoning* is a number of syllogisms so joined together that the conclusion of one syllogism always serves as a premise of the next.

3. The *sorites* is an abbreviated polysyllogism. It consists of more than three propositions so joined to-

gether that the predicate of one always becomes the subject of the next; in the conclusion then the subject of the first proposition is joined to the predicate of the last.

Example: The human soul is rational.
Now what is rational, is spiritual.
Now what is spiritual, is also immortal.
Therefore the human soul is immortal.

Part 4

METHOD

a. Method may be defined as the order to be observed in a series of actions so that a definite goal (purpose) be attained.

Wherever a definite goal is to be attained by a series of actions, method is of supreme importance. Method is necessary to build a bungalow, to turn out a Stetson shoe, to bake biscuits. Without some method, such things could not be accomplished.

Methods are neither true nor false; they are either good or bad. A *good* method is one by which the desired goal is attained securely and easily; if the method be such that the desired goal cannot be attained at all or only with great difficulty, it is called *bad.*

b. Logic is essentially a treatise on method. The goal however, is not the making of bungalows or shoes or biscuits, but *truth of thought,* that is, the truth of the conclusions of our reasoning processes. Nor are the actions to be ordered correctly manipulations of the hand, but the *operations of the mind* involved in reasoning.[1]

c. The simplest form of logical method is inference

[1]Scholastics generally restrict logic to the reasoning process as such. English logicians also treat of many other methods, which pertain more to modern sciences and their various branches.

and the syllogism. The rules laid down for them assure us that our reasoning processes will lead us to true conclusions.

However, the operations of the mind involved even in the ordinary syllogism are relatively few, and the goal to be attained is the truth of one proposition. Method rather refers to processes involving *many* steps, and the ultimate goal of all reasoning is *systematic knowledge*. We shall therefore discuss first the notion of system, called 'scientia' by the Scholastics, and then the three indispensable ways of arriving at it called 'modi sciendi.'

CHAPTER 1

The System

1. General Notion

The ultimate goal of all study is the system, i.e. the *orderly arrangement of our concepts.* For, order being the supreme law of reality, it must also be the supreme goal of our intellectual endeavors; as a matter of fact, we are not satisfied unless our knowledge of things is orderly and systematic.

Now systematic knowledge consists in such an arrangement of our concepts that their identity and diversity is *apparent at a glance.*

Take three concepts with which we are all familiar: animal, man, brute. Man is not a brute, nor are brutes men. But both men and brutes are animals. 'Animal' may be predicated of both men and brutes. The order existing between three concepts like these, is generally indicated by arranging them thus:

ANIMAL

Man — Brute

This diagram shows us what is meant by coordination, subordination, superordination of concepts. Coordinated concepts cannot be predicated of one another; but a subordinated concept may be made the S of a proposition, of which the superordinated concept is the P.

From this diagram we also understand why subordinated concepts are called the *inferiors* of the superordinated concept.

2. Predicables

Seeing that the higher concept can be predicated of its inferiors, there is a relation of identity between them; for logical predication expresses identity. And seeing that the higher concept can be predicated of many inferiors, there evidently exists between them the relation proper to the *universal,* viz. one in many.

Now there are various kinds of such relations existing between one and many, and these are called predicables. The Scholastics, taking the essence of the inferiors as the principle of their division, distinguish *5 predicables:*

1. **Species** is such a relation between concepts that the higher concept expresses the *complete essence* of the inferiors. Such a relation exists between 'man' or 'rational animal' and all individual men (Peter, Paul, John etc.); they all agree in possessing manhood, and outside of manhood nothing is essential to them.

2. **Genus** is such a relation between concepts that the higher expresses the *determinable part* of the essence of the inferiors.

3. **Difference** is such a relation between concepts that the higher expresses the *determining part* of the essence of the inferiors.

To understand these last two definitions, remember that we define a thing by means of *two* concepts; one in which many things are alike, the other by which the

thing defined differs from all pertaining to the same group. Thus when I say: Man is a rational animal, 'animal' expresses man's essence, but not completely; it must be further determined by 'rational,' by which man differs from all other animals. Hence 'animal' is said to express the determinable part of man's essence, 'rational' the determining or differentiating part.

The difference is said to *contract* the genus; for by adding a new concept, it lessens the extension of the genus.

4. **Property** is such a relation of concepts that the higher expresses something *necessarily flowing* from the essence of the inferiors, though not pertaining to the essence itself. Thus the faculty of rational speech is a property of man; though not a part of man's essence, it yet flows necessarily from that essence.

Properties are called *generic* or *specific,* according as they flow from the generic or specific essence.

5. The **(logical) accident** is such a relation between concepts that the higher may be *present or absent* in the inferiors without affecting their essence. Thus whether a man be white or black or brown, "he is a man for a' that."

To forestall possible difficulties, observe:

a. These are *mere* definitions or explanations of the terms as used by the Scholastics. Whether and how far predicables correspond to reality, will be told in epistemology. — Likewise, the examples here given, though certainly approved by common sense, are only meant to *illustrate* the definitions. That these illustrations are philosophically correct, will be proved in other parts of philosophy.

b. There are also *other* definitions of the predicables current. A predicable is said to be "P *as* predicated of many S." This definition shows that the predicable coincides with the reflex universal.—Modern scientists especially define a predicable (more concretely) as "the *collection* of all those things of each of which one and the same predicate may be used." In this sense, all men together constitute a species, all animals a genus.

3. Predicamental Trees

1. By analyzing a genus, we may again distinguish in it a determinable and a determining part. We thus get what is called a *higher genus* and a *generic difference*. The generic difference contracts a higher genus to a lower genus.—By contrast, the difference which contracts a genus to a species, is called *specific difference.*

The *highest genus* is one above which there is no other. The highest genera of all created things, that is the highest concepts which may be predicated univocally of creatures, are the *10 predicaments.* — The *lowest* (proximate) *genus* is one below which there is no other.—An *intermediate genus* is one above and below which there are other genera.

2. The Porphyrian Tree

A natural series of genera and species, beginning with the highest genus and descending to the lowest species, is called a *predicamental tree.* Such a series has been correctly worked out by Porphyry concerning *man,* and is therefore called 'Porphyrian Tree.' It is arranged as follows:

SUBSTANCE

Material	—	Immaterial
Living	—	Non-living
Sensitive	—	Non-sensitive
Rational	—	Non-rational

3. Predicamental Trees of Modern Sciences

All modern sciences (zoology, botany, chemistry etc.) try to construct similar trees for the classes of beings with which they are concerned. It is an attempt at system. Two things should, however, be kept in mind:

a. These sciences employ *terminologies* slightly different from that of the Scholastics; they speak not only of species and genera, but have adopted special names for higher genera, calling them 'families,' 'classes,' 'orders,' 'phyla' etc. This is a praiseworthy innovation.

b. The series which have been worked out by scientists so far, are not natural, i.e. based on the *essences* of things, but merely *provisional* and purely 'systematic.' Scientists do not *prove* that the similarities and dissimilarities on which these series are based, are essential; in many cases, these are evidently accidental. Now, as understood by the Scholastics, the differences between the various steps of a system, are to be essential; being primarily philosophers, the Scholastics could not be satisfied with less; for "scientia est de universalibus." But from this it follows that the predicamental trees as found in books on modern science are such only by analogy.

CHAPTER 2

Modes of Acquiring Systematic Knowledge

I. DIVISION

1. Notion

Division is a speech distinctly enumerating the parts of a whole.—*Subdivision* is a speech distinctly enumerating the parts of a part.

To explain:

a. A *whole* is something which is composed of parts, and can therefore be broken up. *Parts* are those things of which a whole is composed, and into which it can therefore be broken up.

A *real* whole is one which cannot be predicated of the single parts; e.g. a house, which cannot be predicated of the single rooms.—A *logical* whole is one which can be predicated of the single parts; e.g. animal, which can be predicated of Peter, a horse etc. In other words, the logical whole is a *universal* concept, and its parts are the inferiors of which it can be predicated.

In this chapter we only speak of the *logical* whole and its parts.

The parts of a logical whole are also called *members* of the division. They are also called *subjective* parts, because they can be subjects in propositions of which the logical whole is the predicate (e.g. Peter is an animal; the horse is an animal).

b. There are various ways of *expressing* division; e.g. an animal is either rational or irrational; some animals are rational, others irrational; animals are divided into rational and irrational etc.

c. By 'speech' is not meant a long Ciceronian oration, but merely a "connected series of words." That is, on the one hand, the division must consist of *more than one word;* for it is supposed to enumerate the various parts of a whole. On the other hand, being the predicate of a single proposition, it must be *brief.*

2. Kinds of Division

Division is said to be *essential* or *accidental,* according as there is an essential or only an accidental difference between the members of the division. Hence:

a. *Essential divisions* are the following: a) when a genus is divided into its species; b) when a higher genus is divided into its lower genera; c) when an analogous term is divided into its analogates.

b. *Accidental divisions* are the following: a) when a substance is divided according to its accidents (e.g. horses are either white or black or brown etc.); b) when an accident is divided according to its subjects (e.g. motion is either molar or molecular or atomic etc.); c) when an accident is divided according to its accidents (e.g. motion is either slow or fast, up or down).

3. Laws of Division

a. The division must be *adequate,* i.e. such that all the members when taken together, equal the whole. For the whole is equal to its parts when taken together.

Hence the following is a wrong (inadequate) division: Men are either Americans or Chinamen.

It is also evident that no single member of a division can equal or exceed the whole.

b. The single members of a division must *exclude* one another; they must not overlap. Hence the following is a wrong division: Men are either white or black or mechanical engineers.

c. The division must keep to the *same principle* or foundation.

The principle of a division is the aspect according to which the division is made; it is a mark which is found in all the members of a whole, yet differs in each. Thus we may divide man according to race or language or color etc.

d. The division must be *orderly*.

This rule refers especially to cases where there are subdivisions. It means that each division or subdivision should comprise those parts and those only which immediately constitute the whole.

II. DEFINITION

Generally speaking, to define is to explain what we mean by a term. There are two principal kinds of definition: nominal and real.

1. Nominal Definition

1. Notion

A nominal definition merely explains the word as such, not the thing signified by the word. This may be done in various ways: a) by distinguishing between the various meanings of an ambiguous term; b) by

giving merely synonyms or words better known; e.g. campus is a field; c) by giving the etymology of a word; e.g. philosophy is love of wisdom; d) by enumerating some or all of the things signified; e.g. plants are trees, shrubs, flowers etc.; e) by merely appealing to the usual meaning; e.g. space is that which people mean when they speak of space.

2. Use of Nominal Definitions

Nominal definitions are used chiefly at the *beginning* of a disputation, to indicate what is the subject (S) under dispute. Thus when setting out to prove that plants have no sense life, we may define by merely enumerating various objects called 'plants' by everybody.

3. Rules

a. If a word has only one definite meaning, this is to be adhered to.

b. If the meaning of a term be itself in dispute, its nominal definition must be such that it can consistently be admitted by both sides of the dispute.

2. Real Definition

Real definition is a speech explaining not merely the term, but the *thing* signified by it. Real definition is either essential or descriptive.

1. Essential Definition

An essential definition is a speech explaining the essential parts of a thing. But according as these parts are either really distinct from one another or only in

our mind, essential definitions are either physical or metaphysical.

a. The *metaphysical* definition consists of the *proximate genus* and the *specific difference;* e.g. man is a rational animal.

This is the most perfect kind of definition. We arrive at it by three steps. First we compare the thing to be defined with all other things; then we indicate the class to which it belongs; lastly we point out that which differentiates it from all the other things belonging to the same class (see p. 56-57).

All other definitions are built up on the analogy of this.

b. The *physical* definition indicates those parts of a thing which constitute its essence, but are really distinct from one another. Thus man may be defined as "a substance composed of a body and spiritual soul."

2. Descriptive Definition

On the analogy of the metaphysical definition, the descriptive definition indicates something which the thing to be defined has in *common* with many others, and a *distinctive* mark, which differentiates it from everything else in that class. According to the nature of this distinctive mark, logicians distinguish principally *4 kinds* of descriptive definition:

a. The *proper* definition explains the thing to be defined by one or more of its properties; e.g. man is an animal with the faculty of rational speech.

Such definitions are called *popular* or *scientific* or *philosophical,* according as the properties indicated are sufficiently distinctive for the popular mind, or serve

scientific purposes, or have been proved to be properties in the strict sense.

b. The *causal* definition explains a thing by its proper extrinsic cause, especially by its purpose; e.g. a clock is a contrivance to indicate time.

c. The *genetic* definition explains how a thing originates.

d. The *accidental* definition explains a thing by enumerating so many (logical) accidents that they can only fit this one thing. We thus define especially *individuals.*

3. Laws of (Real) Definition

a. Definitions must be *brief,* i.e. contain nothing superfluous.

b. Definitions must be *simply convertible* (see p. 38); for they are supposed to fit only the things defined.

c. Definitions must be *clear,* so that one can readily see what they mean, what things are included and excluded, what they attribute to the things defined. Consequently the following, though common today, are wrong definitions: a) those which contain ambiguous or obsolete or metaphorical words; b) those which define a thing by itself (e.g. logic is the science of logical operations); c) those which are wholly negative (e.g. man is not an angel).

d. Definitions must be *clearer than the things defined.* Else they lose their purpose, which is to explain.

Philosophically speaking, a thing becomes clearer by being reduced to higher genera. Now we cannot go on reducing a thing to ever higher and higher genera; there must be a stop somewhere.

There must then be some *highest* genera, which cannot properly be defined.

Hence *not everything can be defined.*

III. ARGUMENTATION

Argument is merely another word for reasoning. But argumentation rather refers to the *method* of arguing or reasoning, especially where many steps are involved.

1. Principles of Argumentation

1. Reasoning, whether involving few steps or many, is a mental process in which we pass from what is known to what is yet unknown (see p. 33). From this definition, it is clear that all reasoning supposes certain *principles,* i.e. things which must be known and admitted beforehand; without them reasoning would simply be impossible. They are called principles, because the process of reasoning begins with them and the conclusion flows from them.

Let us observe at once that it would be absurd to demand proof for everything. Just as in defining we must eventually come to notions which cannot be strictly defined, so in argumentation we must come to *ultimate* (or *first)* principles which cannot be proved by another process of reasoning.

2. However, we must distinguish between material and formal principles of argumentation.

The *material* principles are the terms and the propositions (premises); the *formal* principles are those truths which insure the correctness of the process of

reasoning. Thus the formal principle underlying the categorical syllogism is the 'principle of identity'; the formal principle underlying the conditional syllogism is the 'principle of sufficient reason.'

3. But what must we *know* of these principles beforehand? What must be admitted by both parties to a dispute, so that a conclusion may be reached?

a. With regard to the *terms:* Of the subject (S) we must know at least the nominal definition. Besides, we must know that it exists (unless, of course, precisely its existence be in question).—Of the predicate (P) and the middle term (M) the real definition must be known.

b. The *premises* must be admitted as certain or at least as probable.

c. The *formal* principles must be known at least implicitly and as certain; for without them the argumentation would have no force whatever.

2. Kinds of Argumentation

1. Demonstration and Probable Argument

Demonstration is a correct argument from certain (and evident) premises. A probable argument is a correct argument from probable premises.

The difference also appears in the *conclusion.* For the conclusion of a demonstration is certain (and evident), whereas a probable argument can only lead to a probable conclusion (see p. 202).

Note again that in either case the form must be *correct;* an argument that lacks correct form, is really

no argument at all, though it may have the appearance of one.

2. Direct and Indirect Argumentation

The principle of this division is the *contradictory* of the conclusion to be proved.

Indirect argumentation proves a proposition by showing that the contradictory of it is false or absurd. It is generally hypothetical in form, and rests on the self-evident principle that if either of two contradictory propositions is false, the other is true (see p. 36).— Direct argumentation proves a proposition without using this roundabout method.[1]

Akin to the indirect proof are a) the *negative* argument, which merely shows that an assertion has not been or cannot be proved; b) the *'argumentum ad hominem,'* which proceeds from the admissions of the opponent, whether these be true or false; c) the *retort,* which shows to the opponent that he contradicts himself, i.e. that either his premises or his conclusion lead to something which he cannot consistently admit.

As is evident, none of these forms of argumentation establishes a positive thesis.

3. A priori and a posteriori Argumentation

The principle of this division is the relation of *real* priority between premises and conclusion.

[1]All true propositions can be proved indirectly; in fact, indirect proof is often the only one possible or feasible, especially where we deal with the first principles of cognition (as in epistemology). Still, indirect proof has one drawback. It only shows that a proposition cannot be denied in reason, not why it must be admitted as true. Hence it is called an *imperfect* argument.

The premises are always logically prior to the conclusion; for the premises are the logical reason why we assent to the conclusion. But the things signified by the premises may *in reality* either precede or follow the thing expressed in the conclusion. If they precede, the reasoning is called a priori; if they follow, the argument is a posteriori.

To illustrate. The cause is really prior to the effect, the effect is really posterior to the cause. But we may reason either from cause to effect (a priori) or from effect to cause (a posteriori). Thus if you argue that John will die because he has double pneumonia, you argue a priori; for double pneumonia is the real cause of death. But if you argue that John must have had double pneumonia, because he died, you argue a posteriori.

> The *regressive* argument *(legitimate circle)* aptly joins both these kinds of reasoning. Thus from the *obvious* order in the world, we conclude (a posteriori) to the wisdom of the Creator; then, retracing our steps, we may, from the infinite wisdom of the Creator, conclude (a priori) that there must be order even in those things which *seem* to us without order.

4. Deduction, Induction, Convergence of Probabilities

The principle of this division is the *quantity* of the terms compared.

In *deduction* we pass from universal to singular (or at least to less universal). Thus: All bodies are heavy; now the air is a body; therefore the air is heavy.

In *induction* we pass from singular to universal.

Thus: metals, woods, stones etc. are heavy; therefore all bodies are heavy.[1]

In *convergence of probabilities* we pass from singular to singular. Thus: Peter, Paul, John assert that Rome exists; therefore Rome exists.

Deductive reasoning may be a priori or a posteriori; induction and convergence of probabilities are necessarily a posteriori.

3. Probable Arguments

As was said above (p. 67), the probable argument is one, the premises of which are only probable, not certain. Either the major may be probable or the minor or both; in any case, the conclusion does not exceed probability.

In a special sense, however, a probable argument is one in which the *major,* though a universal proposition, is only probable. Such principles are particularly two:

a. The principle of the *argument from analogy:* "What is true of one, is true of others similar to it." Or also: "A thing which is similar to another in one respect, is similar to it also in other respects."

b. The principle of the *argument from a hypothesis:* "What conveniently explains all phenomena of a given class, is their true cause."

[1] Under what *conditions* such a transition from particular instances to a universal proposition is legitimate, will be discussed in epistemology.

APPENDIX 1

Fallacies

A fallacy or sophism is an argument which seems to be correct, but is not. A fallacy, therefore has the *appearance* of a good syllogism; an argument in which the form is evidently awry, is not called a fallacy; it would deceive nobody.

Following Aristotle, we divide fallacies into those of diction and those apart from diction. In the former, the deception is due to the identity of the *words* used, in the latter to the fact that the *things* spoken of are similar to other things.

1. Fallacies of Diction

1. *Equivocation* is the use of the same word in different meanings.

Thus one might argue: All birds have wings; now John is a bird; therefore John has wings. The *same word* 'bird' is used as middle term in the major and in the minor; hence the form of the argument is *apparently* correct. But the meaning of 'bird' is by no means the same in both premises.

To lay bare the fallacy, *distinguish* the major and *contradistinguish* the minor. Thus: Birds in the proper sense have wings, yes; birds in a metaphorical sense have wings, no (or transmit); John is a bird in the proper sense of the word, no; Peter is a bird in a metaphorical sense, yes (or transmit).

Equivocation is an exceedingly common form of fallacy. The only way to avoid it in our own reasonings and to detect it in the reasonings of others, is a careful study of the various meanings of the terms we use or hear used.

2. *Ambiguity* is the use of a phrase or a whole sentence in different meanings.

3. *Illicit transition* from one supposition of a term to another.

The most common form of this fallacy is the transition from the collective to the distributive supposition or vice versa. Thus: The Apostles preached everywhere (as St. Mark tells us); now St. Philip was an Apostle; therefore St. Philip preached everywhere.

The fallacy is exposed by pointing out the difference of supposition.

2. Fallacies Outside of Diction[1]

1. The *fallacy of the accident* consists in tacitly supposing as always true what is true only under certain circumstances. In other words, this fallacy tacitly confuses what is accidental with what is essential, ascribes to all what is true of only one or a few (*"ab uno disce omnes"*), infers at once that a thing must be so because it is so. Thus from the evil influences to which man is accidentally exposed in society, Rousseau infers that social life is essentially evil, and that the life of a savage is the normal condition of man.

Akin to this is another fallacy in which a mere ante-

[1] An excellent exposition of these and many others will be found in Toohey, Elementary Handbook of Logic.

cedent is tacitly supposed to be a true cause *("post hoc, ergo propter hoc")*. Thus the pagans blamed the introduction of Christianity for the downfall of the Roman empire.—By defining cause as a mere antecedent, Hume really would make this fallacy the keystone of science and philosophy. Evolutionists, too, by tacitly assuming that later forms of life are invariably the descendants of earlier forms, really suppose to be a true cause what is perhaps a mere antecedent (e.g. man's ancestors).

2. *Arguing beside the point* consists in proving what is not in question at all. This fallacy may be committed in various ways:

a. Sometimes the disputant *misses the point at issue* altogether, or misconstrues the position of the opponent; as when Protestants condemn Catholics for adoring Saints.

b. Sometimes the disputant *proves too much,* and therefore proves nothing *("Qui nimium probat, nihil probat")*. Thus if one were to prove the spirituality of the human intellect by claiming that the intellect has no need at all of the senses, he would prove too much; for that would make the human intellect angelic.

c. Sometimes the disputant *proves too little,* and again proves nothing. Such would be the case, for instance, if one were to prove human freedom by pointing to man's immunity from external forces.

3. *Begging the question* consists in implicitly supposing as proved what is yet to be proved. Its most common form is the so-called *vicious circle,* in which A is proved by B, and then B by A.

A famous example of this fallacy is Descartes' proof of the trustworthiness of human reason. He first proves God's veracity (of course, implicitly relying on the soundness of human reason; else the argument would prove nothing), and then proves the soundness of human reason by God's veracity.

APPENDIX 2

The Thesis

It is customary today among Scholastics to present philosophy in a series of theses. This is by no means the only nor perhaps the best form. Still it has its advantages. And as we shall follow common usage, a few remarks to explain its makeup will not be out of place.

Generally speaking, the thesis consists of 6 parts:

1. The *statement* of the thesis. This ought to be worded with the utmost care; there should be no ambiguity, no superfluity, no obscurity. Without exaggeration we may say that the laws laid down for real definitions (see p. 65) find their application here.

2. The *state of the question* (status quaestionis). This part comprises first of all an explanation of the terms used in the statement of the thesis, secondly a brief description of the meaning of the thesis as a whole (including distinction of parts, if there are any), thirdly an outline of the various opinions formerly or now held on the subject of the thesis.

It is also becoming more and more customary to state at the outset whether the thesis is to be held as certain or as only probable. Not all theses found in scholastic textbooks are certain. Hence assigning a '*note*' to each thesis helps toward clearness of thought.

3. The *proof,* which consists of one or more arguments.

In textbooks written for beginners, it seems best to put all arguments in strictly syllogistic form. Such a practice may look unnatural and stilted, but it is an invaluable aid toward clear thinking.

Strictly speaking, one argument suffices. Usually, however, *several* are given. The thesis may be connected with many other truths already known, each of which may shed light on it. Besides, not all arguments are of equal force, nor does every argument equally appeal to all.

4. *Corollaries.* These are propositions which flow (immediately or mediately) from the thesis. One who admits the thesis, cannot logically deny them.

5. *Objections* or *difficulties* are the arguments by which the opponents of the thesis try to uphold their side. It is the student's duty not only to be acquainted with them, but also to be able to solve them.[1]

6. *Scholia* are brief discussions of points more or less connected with the thesis.

---

[1]The various ways of answering objections will be discussed under 'Scholastic Disputation' (see p. 77 to 85).

APPENDIX 3

The Scholastic Disputation

1. General Remarks

1. The general *purpose* of scholastic disputations or circles (as they are commonly called) is twofold: a) to repeat a thesis already explained and to clarify its import in the minds of the class, b) to test and sharpen the minds of the disputants.

There are only two disputants: the *defender,* whose duty is to explain and prove the thesis assigned, and to answer all objections brought against it; the *objector,* who marshals various arguments against the same thesis. Generally also a time-keeper is appointed, who, however, does not enter the fray, but merely calls out the time allotted to each of the disputants.

A scholastic disputation is not a debate. The thesis assigned is not a debatable matter, but is to be held by the defender against all comers; no vote is taken at the end. Nor is the scholastic disputation an oratorical contest. Long speeches and Ciceronian periods are wholly out of place. In fact, one of the rules is that the disputation must proceed *"in form,"* that is, by way of strict syllogisms.

2. General Rules

a. As was just remarked, scholastic disputations proceed by way of strict syllogisms ("in form," as it is called). At times, it may be necessary to put a question

or to ask for an explanation. But as a rule, syllogism follows syllogism; for the syllogism is the simplest, clearest and most cogent form of argumentation.

b. Let each disputant take the other's words in exactly the same sense in which they were first uttered. Twisting an opponent's words to one's own meaning, is foreign to scholastic disputation.

c. Let modesty and charity reign throughout. No sarcasm, no superior airs, no abusive language, no derogatory remarks. Above all, no shouting or thumping of tables; it is a battle of wits, not of voices or fists.

d. Both disputants are seated. In some places, however, it is customary for the defender to stand while announcing the thesis to be defended, and for the objector while making his counter-assertion.

2. General Outline

Suppose the thesis to be defended is the following: "Philosophy is a desirable branch of study."

The *defender,* standing, begins by saying: The thesis to be defended today is as follows: "Philosophy is a desirable branch of study." Seating himself, he then explains what he understands by philosophy (S) and in what sense he claims it to be desirable (P). Passing the centuries in review, he enumerates the various opponents of the thesis, indicating also some of the reasons of their opposition. Finally he proves his thesis by one or more syllogisms. After that he says: And thus the thesis would seem to be proved.

The *objector* now begins: Against the thesis which says "Philosophy is a desirable branch of study," I

argue thus: "Philosophy is undesirable; therefore your thesis is false."

Defender. Against the thesis which says "Philosophy is a desirable branch of study," it is argued: "Philosophy is undesirable"; therefore the thesis is false. Philosophy is undesirable—I deny the antecedent.

Objector. I shall prove the antecedent. A study which does not agree with our natural inclinations, is undesirable; now philosophy is such a study; therefore philosophy is undesirable.

Defender. He first repeats the whole syllogism word for word. Then he says: Regarding the major: A study which does not agree with our inclinations, is undesirable—I distinguish the major: A study which does not agree with any of our inclinations, is undesirable—I concede the major; a study which does not agree with our lower, but does agree with our higher inclinations, is undesirable—I deny the major. Regarding the minor: Philosophy is such a study, I contradistinguish the minor. Philosophy does not agree with any of our inclinations—I deny the minor. Philosophy does not agree with our lower inclinations—I transmit the minor. Therefore philosophy is undesirable—with the distinction given, I deny the conclusion.

Objector. But philosophy agrees with none of our inclinations; therefore my objection stands.

Defender. But philosophy agrees with none of our inclinations; therefore the difficulty stands. Regarding the subsumption: Philosophy agrees with none of our inclinations—I deny the subsumption.

Objector. I shall prove the subsumption. If phi-

losophy agreed with any of our inclinations, it would agree with the higher. Now philosophy does not agree with our higher inclinations; therefore philosophy does not agree with any.

Defender. He again repeats the whole syllogism. Then he says: Regarding the major: If philosophy agreed with any of our inclinations, it would agree with the higher—I grant the major. Regarding the minor: Philosophy does not agree with our higher inclinations—I deny the minor.

Objector. I shall prove the minor. A study which deals only with obscurities, does not agree with our higher inclinations. Now philosophy is such a study. Therefore philosophy does not agree with our higher inclinations.

Defender. He first repeats the whole syllogism. Then he says: Regarding the major: A study which deals only with obscurities, does not agree with our higher inclinations—I distinguish the major. A study which deals with obscurities and leaves them obscure—I grant the major. A study which deals with obscurities to elucidate them—I deny the major. Regarding the minor: Philosophy is such a study—I contradistinguish the minor. Philosophy deals with obscurities to leave them obscure—I deny the minor. Philosophy deals with obscurities to elucidate them—I grant the minor. Therefore philosophy does not agree with our higher inclinations—I deny the conclusion.

Objector. But philosophy does not elucidate obscurities. Therefore my difficulty stands.

And so on until time is called.

3. Special Points

1. For the Defender

The defender gives no reasons for his answers, though, of course, he must know them. But he must beware of being "sacked," that is of being forced to retract an answer once given.

Ordinarily, the defender will answer the objections by a *concession* or by a *denial* or by a *distinction*. He concedes a proposition which is true; he denies those which are false; he distinguishes ambiguous propositions, i.e. those which have a true and a false meaning, granting the former and denying the latter.

The ambiguity may be contained in any of the three terms of the opponent's syllogism, and as each term occurs twice, any distinction must be applied to two propositions. If M is ambiguous, the major must be distinguished and the minor contradistinguished. If either S or P is ambiguous, distinguish the premise in which the term occurs and "likewise" distinguish the conclusion.

Other forms of reply:

a. If the objector's syllogism violates any of the rules of the syllogism, there is no use replying to the single propositions. Let the defender simply say: "The syllogism *lacks form* or sequence." If asked, the defender must, of course, be ready to tell which rule is violated.

b. A proposition may be *transmitted* if it does not seem altogether true, yet has no special bearing on the objection proposed.

c. Sometimes the objector's argument rests on a

false supposition. In such a case the defender says: "I deny the supposition, viz. . . ." indicating the false supposition.[1]

d. If in a *disjunctive* syllogism the disjunction is incomplete, the defender says: I deny the major, or the disjunction of the major is incomplete. He may then add the member missing or wait until asked to do so.

e. In objections from *analogy* (similarity, a pari), he will often find it necessary to deny the parity.

f. If the defender is asked a *question,* let him, before answering, repeat it word for word. This will not only give him time to think, but also insure mutual understanding.

g. If the *major* is to be denied, let him say: "Begging your pardon, I deny the major." The reason is that before making a universal statement (such as the major usually contains), every intelligent being is supposed to have examined it very carefully; hence to reject a man's universal proposition flatly, is rather a slur on his intelligence.

2. For the Objector

The objector denies the thesis, but he also supports his denial by means of arguments, the best he can think of. He pretends to be convinced of the opposite. Therefore he asserts the contradictory (or contrary)

[1] The objector is very apt to base his argument on a false supposition when he does not know the precise meaning of the thesis he is to attack.

of the thesis and advances various arguments to prove that he is right.

> a) If a thesis contains several statements, he may direct his attacks against any one of them, leaving the others out of the disputation. b) Instead of attacking the thesis directly, he may also object against the arguments brought forward by the defender.

How to prepare objections? There are two sources where objections against a thesis may be found: Reflection and books.

Studying a thesis and reflecting on its meaning and force, the objector may find that it seemingly clashes with other theses or with facts known to him from experience, history etc. Let him jot down these apparent contradictions as they occur to him and throw them into syllogistic form. Let him then try to foresee what the defender, in the light of his thesis, would reply to them and hence how he would subsume on the defender's answers.

Books on the same or kindred subjects are only a secondary means. Their principal purpose is to stimulate reflection, not to furnish ready-made syllogisms and subsumptions.

How the objector is to begin and proceed in the actual disputation, is clear from the general outline. Let him remember three things with regard to the syllogisms he advances. a) They should, as far as possible, be *categorical* and of the *first figure;* for in these the form is most convincing. Conditional syllogisms should not be indulged in too often. b) Make your syllogisms as *short* as possible; for remember that the

defender will have to repeat them word for word. c) Do not add the *reasons* for your premises; if necessary, these will be brought out in the course of the disputation; e.g. when a premise is flatly denied by the defender.

Let the objector also note the following points:

a. If a premise has been *denied,* he must at once prove it by means of a syllogism, saying: I shall prove the major (or minor).

b. If his syllogism has been *distinguished,* he can urge the difficulty by *"subsuming."* The ordinary way of subsuming is to take up the precise member denied in the defender's distinction and to prove it true by means of another syllogism.

c. If the solution given by the defender is not clear, he may ask: Please explain your distinction.

d. If the defender should deny a universal proposition which would seem to be undeniable, the objector may counter by saying: Will you please give me an exception.

e. If the defender denies a disjunction to be complete, the objector may say: Will you please add another member to the disjunction.

3. For the Audience

Scholastic disputations are not much in favor today. Even students of philosophy are often listless and apathetic. The main reason for this apathy is no doubt that many in the audience do not know what to do with themselves during the disputation. Merely sitting there and listening or waiting for a good laugh is not intel-

lectual work. But the audience (the class, as a rule) is meant to do more.

While the defender is repeating the thesis in his own words, let each member of the class see if his conception of the thesis agrees with that of the defender. Ask yourself: Are the defender's definitions and divisions correct? Does he bring out the stand of the adversaries? Are his arguments in good form? Why not use different arguments?

When listening to the objections, reflect how you would answer them. Does the defender's answer really solve the difficulty or only push it back? Are you satisfied with the answer given? Could you urge the difficulty still further? If so, your chance to speak up comes after the appointed objectors.

For after the objectors' time is up, the time-keeper invites the audience, who may propose any question or difficulty on the matter in hand.

APPENDIX 4

Exercises

Exercise 1

(to page 14)

A. Concerning the following sets of ideas:

a. Arrange each in descending order, i.e. with less and less extension. b. Indicate some of the notes by which the ideas of each set differ from one another. c. Enumerate some of the things of which each of the ideas may be predicated. d. Show that comprehension and extension stand to each other in inverse ratio.

1. Cathedral—building—St. Peter's in Rome—church
2. Knife—hardware—cutlery—pen-knife
3. Shoe—covering—sandals—footwear
4. Vulgate—printed matter—bible—book
5. Cow—Holstein—living being—animal

B. Can you supplement each of the following ideas by three others in ascending order?

Buick, Statler hotel, Cunarder, kitchen door

Exercise 2

(to page 15)

Indicate whether the following ideas are universal, particular, singular or collective, and if collective, whether they are universal, particular or singular:

City—a sentence—some building—apple-tree—this parade—family—Julius Caesar—animal—this flock—some mobs—doctor.

Exercise 3

(to page 16)

In the following sets of two ideas, ask yourself: a. Is there identity or diversity between them? b. Is the identity (or diversity) formal or objective, complete or partial?[1]

1. college—poor
2. logic—easy
3. book—novel
4. building—mansion
5. elephant—puny
6. speed—reckless
7. rabbit—swift

Exercise 4

(to page 18)

What is the extension of the following terms?

Every teacher—summer—a horse—this book—no stone—the White House—a filling station—the man who drove the car—each guest—no team—that street—all towns.

Exercise 5

(to page 18)

Suppose that in each of the following sets, the first term is predicated of the other two, in what sense is it predicated?

1. bank—First National—Savings
2. bank—First National—snowbank
3. automobile—Ford—Buick
4. chair—Chippendale—chair of philosophy
5. city—Chicago—Detroit
6. figure—ten—circle

[1]The ideas may be taken either in the abstract or in the concrete.

7. ball—tennis ball—dance
8. slip—a small piece—a lapse in speech
9. bridge—Brooklyn bridge—a game of bridge
10. end—death—purpose

Exercise 6

(to page 19)

In the following sentences, what is the supposition of the subject?

1. Some Indians are crafty.
2. Brave men were living before Agamemnon.
3. No medicine can restore the dead.
4. Cares make wrinkles.
5. Animal is a genus.
6. A ship was in distress.
7. Los Angeles is picturesque.
8. Mathematics is the bane of my life.
9. All horses are animals.
10. Boston is a word of two syllables.
11. Americans love sport.
12. The plant is a living being.

Exercise 7

(to page 25)

A. Regarding the sentences given below, answer the following questions: a. What is the quality of each? b. What is the quantity of each? c. By what letter (A, E, I, O) would you therefore designate the single propositions? d. What is the extension of the predicate of each proposition?

1. No aeroplane is indestructible.
2. Some teams are not manageable.
3. All cows are herbivorous.
4. Some books are tiresome.
5. Every lie is cowardly.
6. Not all poets are inspired.

7. No man is hopeless.
8. Some streets are not crooked.
9. Not all invitations are acceptable.

B. Ask yourself the same questions regarding the sentences of the preceding exercise (omit sentences 7 and 8).

Exercise 8

(to pages 26-32)

Examine the following propositions as to a) kind, b) matter and form, c) number of assertions:

1. Poets are born, not made.
2. Open rebuke is better than hidden love.
3. Prejudice and love of truth are irreconcilable.
4. Either New York or London is the biggest city.
5. As the door turneth upon its hinges, so doth the slothful upon his bed.
6. Unless the Lord build the house, they labor in vain who build it.
7. All but one boy had fled from the burning deck.
8. You cannot sleep and read.
9. We cannot possibly win.
10. Where there is a will, there is a way.
11. The river you see from the train is the Hudson.
12. Dead is he, but not departed;
    For the artist never dies.
13. If Carthage had aided Hannibal, Rome would have been lost.
14. I have neither money nor work.
15. Even a fool, if he will hold his peace, shall be counted wise.
16. Like father, like son.
17. The earth alone is inhabited.
18. Better are the wounds of a friend than the deceitful kisses of an enemy.
19. Neither the League of Nations nor the World Court will avert war.
20. Unless it rains soon, our water supply will be exhausted.

Exercise 9

(to pages 34-37)

A. Give the contradictory of the following propositions:

1. Some novels are worth reading.
2. All is vanity.
3. No man is hopeless.
4. Animal is a genus.
5. Nobody can sleep and read.
6. John is a sailor.
7. All men have an immortal soul.
8. Like father, like son.
9. The earth alone is inhabited.
10. Poets are born, not made.
11. Not all invitations are acceptable.
12. Plants have no feeling.
13. The mountain you see is Pike's Peak.
14. Either New York or London is the biggest city.
15. Knowledge is power.

B. Construct complete squares of opposition for the following propositions:

1. Some horse is white.
2. Knowledge is power.
3. No ship leaves port without lifeboats.
4. Familiarity breeds contempt.
5. Some victories are disastrous.
6. Fame begets envy.
7. Poets are inspired.
8. Some books are not tiresome.

C. If in the following sets of propositions, the first is true (or false), what follows with regard to the other?

1. All is vanity—some things are not vanity.
2. Some horse is not black—no horse is black.
3. Some heads are grey—all heads are grey.
4. No star is fixed—some star is not fixed.

5. Some knowledge is power—some knowledge is not power.

6. All honor comes by diligence—no honor comes by diligence.

7. All injustice is hideous—some injustice is hideous.

Exercise 10

(to pages 37-38)

A. Convert the following propositions:

1. All new things are striking.
2. Some cowards are miserable men.
3. No jazz is music.
4. Facts are stubborn things.
5. Fame begets envy.

B. Are the following conversions correct, and if so, of what kind are they?

1. Some praise is flattery—all flattery is praise.
2. All dogs are animals—all animals are dogs.
3. All cathedrals are churches—some churches are cathedrals.
4. Some Chinamen are not white—no white person is a Chinaman.
5. No dilettante is a scholar—some scholar is not a dilettante.
6. Knowledge is power—power is knowledge.

Exercise 11

(to page 39)

Are the following inferences correct?

1. There can be universal peace; therefore there is.
2. There cannot be universal peace; therefore there is not.
3. Prohibition is not enforced; therefore it cannot be enforced.
4. Windmills are possible; therefore there are windmills.
5. There are motor engines; therefore they are possible.
6. Familiarity can breed contempt; therefore it does.

7. Man cannot have descended from the ape; therefore he did not.
8. There are no honest politicians; therefore an honest politician is impossible.
9. Man can sin; therefore he does.

Exercise 12

(to page 48)

A. Indicate Figure, Supply Conclusion, Indicate Mood

1. All animals have senses.
   All mice are animals.
2. All men are animals.
   All men have two feet.
3. All animals have senses.
   Some horses are animals.
4. All birds have wings.
   Some birds have claws.
5. No plant feels.
   Some roses are plants.
6. No dog has wings.
   All collies are dogs.
7. Some men are wise.
   All men are rational.
8. No plant feels.
   The oyster feels.
9. No man is irrational.
   Some animals are irrational.
10. All men are rational.
    Some animals are not rational.

B. Examine as to Correctness

1. All men are rational.
   John is a man.
   John is a scholar.
2. All men have a soul.
   Horses are not men.
   Horses have no soul.
3. All horses are useful.
   This animal is useful.
   This animal is a horse.
4. Birds are animals.
   The cat is not a bird.
   The cat is not an animal.
5. Peter is a man.
   Paul is a man.
   Peter is Paul.
6. Good men obey the laws.
   Sailors break the laws.
   Sailors are not good men.
7. Man is a species.
   Peter is a man.
   Peter is a species.
8. All fishes can swim.
   Charles can swim.
   Charles is a fish.
9. All dogs bark.
   This animal barks.
   This animal is a dog.

10. All Pierce-Arrows are autos.
    A Ford is not a Pierce-Arrow.
    A Ford is not an auto.
11. All circles are round.
    All circles are figures.
    All figures are round.
12. All goats are animals.
    All men are animals.
    All men are goats.
13. All men are mortal.
    All negroes are mortal.
    All negroes are men.
14. All birds lay eggs.
    The goat is not a bird.
    The goat does not lay eggs.
15. Many lawyers are crafty.
    Peter is a lawyer.
    Peter is crafty.
16. No philosopher is an elephant.
    Socrates is not an elephant.
    Socrates is not a philosopher.
17. 3 and 5 are odd numbers.
    8 is 3 and 5.
    8 is an odd number.
18. Some elephants are not wild.
    All tigers are wild.
    Some tigers are not elephants.
19. All soldiers are an army.
    John is a soldier.
    John is an army.
20. All soldiers are paid.
    No volunteer firemen are soldiers.
    No volunteer firemen are paid.
21. All men have two feet.
    No bird is a man.
    No bird has two feet.
22. Some marine animals are edible.
    All oysters are marine animals.
    Some oysters are edible.
23. All men are animals.
    Brutes are not men.
    Brutes are not animals.
24. All these birds are robins.
    The sparrow is a bird.
    The sparrow is a robin.
25. Some monks are learned.
    Luther was learned.
    Luther was a monk.
26. Foxes steal chickens.
    Herod was a fox.
    Herod stole chickens.
27. The truth begets hatred.
    Some lies beget hatred.
    Some lies are the truth.
28. Bostonians are highly cultured.
    New Yorkers are not Bostonians.
    New Yorkers are not highly cultured.
29. The cat is an animal.
    The robin is not a cat.
    The robin is not an animal.
30. All metals are heavy.
    Gold is heavy.
    Gold is a metal.

Exercise 13

(to pages 49-51)

Examine the following hypothetical syllogisms as to correctness of inference:

1. If his heart beats, he is still alive.
   Now his heart does not beat.
   Therefore he is not alive.
2. If a syllogism violates no rules, it is correct.
   Now this syllogism is correct.
   Therefore it violates no rules.
3. This metal is either copper or iron.
   Now it is copper.
   Therefore it is not iron.
4. If you do not study at college, you loaf.
   Now you do not study.
   Therefore you loaf.
5. Either we shall win or lose.
   Now we shall win.
   Therefore we shall lose.
6. If you have fever, you are ill.
   Now you are ill.
   Therefore you have fever.
7. Unless the pond freezes over, we cannot skate.
   Now the pond will not freeze over.
   Therefore we cannot skate.

Exercise 14

(to page 51)

Expand the following enthymemes into complete syllogisms, preferably categorical:

1. You are sick; you must stay in bed.
2. This syllogism is correct; it violates no rule.
3. Man has a spiritual soul; therefore he cannot have descended from the ape.
4. James will die; he has double pneumonia.
5. Dogs are mere animals, and mere animals cannot reason.

Exercise 15

(to page 55)

In accordance with the diagram on this page, arrange the following sets of three concepts:

1. book, primer, reader
2. Iroquois, tribe, Mohawk
3. circle, square, figure
4. steamer, ship, yacht
5. baseball, tennis, game

Exercise 16

(to pages 56-57)

If in the following sets of ideas the first is the subject, in what relation do the others stand to it?

1. Man: white, animal, healthy, banker, rational
2. Water: wet, substance, muddy, fresh, H_2O
3. Oak: tree, living, sturdy, black
4. Dog: swift, being, sentient, black, animal, living

Exercise 17

(to pages 58-59)

Arrange the following sets of concepts in the form of predicamental trees:

1. Square, figure, circle, quadrilateral, lozenge
2. Vulgate, book, bible, novel
3. Animal, canary, quadruped, biped, horse, hen, cow
4. Jew, Methodist, atheist, theist, Christian, Anglican, Mohammedan
5. Baseball, contract, cards, bridge, game, outdoor, golf, indoor
6. Inauguration, civil ceremony, funeral, baptism, religious ceremony, commencement, ceremony
7. Protestant, oriental, Methodist, religion, Baptist, Buddhist, occidental

Exercise 18

(to pages 61-62)

Do the following divisions violate any rule, and if so, which?

1. Churches are either Methodist or Catholic or frame buildings.
2. Books are divided into juvenile and fiction.
3. A house is either a college or a garage.
4. Newspapers are divided into dailies, weeklies and tabloids.
5. Logic is either a science or an art or both.
6. Inference may be immediate or mediate or hypothetical.
7. Some colleges are endowed, others are free.
8. All chemical substances are divided into elements, compounds and mixtures.

Exercise 19

(to pages 62-66)

A. What kind of definitions would you call the following?

1. Philosophy is love of wisdom.
2. Noon is the time when the sun is due south.
3. A college is an institution of higher learning.
4. A pagan is a villager.
5. The potato is an edible farinaceous tuber of a plant of the night-shade family.
6. A physician is a healer of diseases.
7. A circle is a curve generated by one extremity of a straight line revolving in a plane around the other extremity fixed.
8. An American is a citizen of U. S.
9. Water is H_2O.
10. A circle is a round figure.
11. A flag is a national symbol.

B. Do the following definitions violate any rule, and if so, which?

1. Sleep is the image of death.

2. A dagger is a weapon.
3. Man is not an angel.
4. Bread is the staff of life.
5. A net is a reticulated fabric, decussated at regular intervals, with interstices and intersections.
6. Logic is a machine for combating fallacy.
7. Man is a biped who cooks his food.
8. A vehicle is a car for transporting people.

Exercise 20

(to page 68)

A. Change the following propositions into direct arguments (syllogisms of the first figure), and then ask yourself if they are a priori or a posteriori.

1. This substance is gold, because its specific gravity is 19.3.
2. This substance is not gold, because it is not yellow.
3. Theft, being forbidden by the natural law, is a sin.
4. Blessed are the poor in spirit: for theirs is the kingdom of heaven.
5. Philosophy, which teaches man his duties, is very practical.
6. Since Logic teaches us how to think correctly, it is exceedingly important.

B. Change the following propositions into lines of arguments; these may be direct or indirect, comprise one or more syllogisms:

1. Christ is God: if He were not, He would be a liar; for He said: "I and the Father are one."
2. This watch is not gold; if it were, it would not tarnish; gold does not tarnish.

Bibliography

Castets, S.J.—Logic. Trichinopoly 1905

Clarke, Richard F., S.J.—Logic. Longmans, London 1889

Coffey, P.—The Science of Logic (2 vols.). Longmans, London 1912

Coppens, Charles, S.J.—Logic and Mental Philosophy. The Catholic Publication Society, N. Y. 1892

Crumley, Thomas, C.S.C.—Logic. Macmillan, N. Y. 1926

Dimnet, E.—The Art of Thinking. Simon and Schuster, N. Y. 1929

Glenn, Paul J.—Dialectics. Herder, St. Louis 1929

Hill, Walter H., S.J.—Elements of Philosophy. J. Murphy, Baltimore 1877

Jouin, Louis, S.J.—Logic and Metaphysics. Fordham University, N. Y.

Joyce, George H., S.J.—Principles of Logic. Longmans, London 1908

Mahoney, Michael J., S.J.—Essentials of Formal Logic. The Encyclopedia Press, N. Y. 1918

Poland, William, S.J.—The Laws of Thought. N. Y. 1892

Toohey, John J., S.J.—An Elementary Handbook of Logic. N. Y. 1918

Turner, William.—Lessons in Logic. Catholic Education Press, Washington 1911

EPISTEMOLOGY

INTRODUCTION

1. Definition

Epistemology, which is also called "Theory of Cognition," "Critics," "Criteriology," "Major Logic" etc., is the *science of the certitude of our cognitions.*

Explanation:

1. The *material object* of epistemology are 'our cognitions.'

a. *Cognition* is one of those ultimate concepts which cannot properly be defined. It may be described as that which we express in our judgments; for before we assert something, we know it; this 'knowing' is cognition.—Subjectively, cognition may then be called an act of the mind by which we know something.

b. We speak of *our* cognitions, i.e. those of normal men. We are not concerned with God's knowledge, nor with that of the angels. Also the judgments of abnormal people are beyond the scope of epistemology; for, as regards certitude, no one will put these on a par with the judgments of normal people.

Moreover, we only speak of our *natural* cognitions, i.e. those which we can acquire without special divine help or revelation.

2. The *formal object* of epistemology is certitude. Certitude, as will be explained presently, is cognition which is necessarily true and is known to be true. Must our cognitions ever be true? And if so, when, how, why? These are the questions which epistemology discusses.

From the foregoing it is clear that certitude implies truth and therefore epistemology may also be defined as the "science of the truth of our cognitions."

It is customary and proper to treat in epistemology not only of truth and certitude, but also of the states of mind which fall short of the ideal state. Hence epistemology also has something to say about opinions and errors.

2. Division

1. **Existence of Certitude**
2. **Sources of Certitude:**
   a. In general: Our Cognitive Faculties
   b. In particular:
      Consciousness
      External Senses
      Intellect
      Reasoning
      Human Testimony
3. **Nature of Certitude**
4. **Truth and Error**

PRELIMINARY NOTIONS

There are certain notions and facts which are implied in the formal object of epistemology, and which must be taken for granted before we can begin to discuss the questions pertinent to this science. These are first of all the concepts of truth and error, secondly the various states of our mind concerning different propositions. They belong to the patrimony of common sense.

1. Truth and Error

In general, truth means *conformity* (i.e. one thing having the same form as another); its opposite is *difformity*.

There are, however, three divisions:

a. *Logical* truth is the conformity of the mind to its object; as when I judge that the sun is round.—The opposite of logical truth is *error,* i.e. positive difformity of the mind with its object; as when I judge that the sun is square.

> It is an axiom that, with us, truth and error are had in propositions only. A little reflection will easily convince us of this. If one merely utters a word or phrase (e.g. horse, the captain of the team), nobody will say yes or no (unless, of course, the word or phrase implies a whole sentence). It is only after a *proposition* has been enunciated, that we assent or dissent, that we speak of truth or error.

b. *Ontological truth* is the conformity of a thing to the mind; as when we speak of a true friend, a genuine diamond.—Its opposite is called *false.*

c. *Moral truth* is the conformity of a man's speech to his mind; i.e. when he says what he thinks.—Its opposite is a *lie,* an untruth.

Epistemology is only concerned with *logical* truth and error. Ontological truth will be discussed in ontology, moral truth in ethics.

2. States of the Mind

As we know from experience, our mind may be in various states in the face of a proposition put before us. Sometimes we say yes or no without hesitation (e.g. are you alive?); sometimes we hesitate (e.g. how high is this building?); sometimes we give up because we know nothing about the matter (e.g. how many fish are in the sea?).

1. We may conveniently distinguish 4 states of the mind:

a. *Ignorance* is the absence of cognition in one who could and especially in one who should know; e.g. a pupil not knowing his lesson.

b. *Doubt* is the suspension of judgment after deliberation; after deliberating on the matter proposed, we do not say yes or no, we neither assent nor dissent.

c. *Opinion* (belief) is hesitating assent (or dissent). We have good reasons for saying yes or no, but we are aware that we may be wrong. In such cases we often say: I guess, I think, I believe, this is probably so etc.

d. *Certitude* (conviction) is unhesitating, firm assent (or dissent), without fear of error. We express this by saying: I am sure, certain, positive.

The proposition itself to which we give a firm assent, is often called a *certainty*. This is what we refer to when we say: This is certain.

2. Various Kinds of Certitude:

a. *Purely subjective certitude* is an assent (or dissent) which is indeed firm, but really should not be firm; as when our ancestors firmly believed that the earth was flat.

Certitude, being a state of the mind, is necessarily subjective. But this certitude is called *purely* subjective, because it does not rest on anything objective.

b. *Practical certitude* is an assent (or dissent) which is firm merely for practical reasons, viz. because otherwise life would be impossible. Thus we are practically certain that the cook will not poison the soup, that the train we are about to board, will not meet with an accident etc.

c. *Respective certitude* is an assent (or dissent) based on reasons (motives) which are sufficient for certain minds, but not for all. Thus the child is convinced when mother says so.

d. *Formal certitude* is a firm assent (or dissent) which is necessarily true and known to be true; as when we judge that $2 \times 2 = 4$. Not only is our assent firm, but reality necessarily corresponds to it; moreover we are aware of this conformity between mind and reality.

Formal certitude is the *ideal* state of the mind. In all our cognitions we desire to have this state, and we cannot desire more.

Formal certitude is often called *'objective,'* because it corresponds with objective reality.

Part I

EXISTENCE OF CERTITUDE

We are all naturally certain of many things. Who of us doubts that $2 \times 2 = 4$, that there is a world of bodies surrounding us, that there are other people besides ourselves, that we live and move etc.? Nature, or rather God, has made us so that we *cannot* doubt about many things.

Still, there were and are philosophers who maintain, explicitly or implicitly, that we are never formally certain. The principal of these are the so-called *skeptics;* they openly and explicitly deny all formal certitude. But closely akin to them are the *relativists* of our own day.

It is the purpose of the first two theses to show the absurdity of these and similar theories.

Thesis 1

Universal skepticism is theoretically absurd and practically impossible.[1]

Definition of Terms

1. Universal Skepticism

a. A skeptic is one who denies or doubts that we have formal certitude.

A universal skeptic is one who denies or doubts that we *ever* have formal certitude. A partial skeptic is one who denies or doubts that we have formal certitude in a *particular* line of cognition (e.g. in history). The universal skeptic says: Nothing at all is certain. The partial skeptic says: Nothing in history is certain, or reasoning never leads to certitude etc.

Universal skepticism then may be defined as the doctrine or attitude of the universal skeptic. This doctrine may be expressed by the statement: *Nothing is certain.*

[1]All the theses laid down in this epistemology, unless stated otherwise, are *certain* and are held by every unprejudiced person.

On the other hand, most of these theses are *implied* in every sentence we utter, and in every judgment we form in our mind; unless they are admitted as absolutely certain, thought and speech lose their meaning. But from this it follows that the proofs given for them are not strict demonstrations; they are rather meant to show the *connection* between the various elements necessary for formal certitude.

b. There is also a distinction between so-called objective and subjective skeptics.

The *objective* skeptic admits that our assents are often firm and unhesitating, but he denies that they are ever rightly so. The *subjective* skeptic denies even that our assents are ever firm and unhesitating.

The doctrine of the subjective skeptic may then be put thus: *We are never certain.*

2. Theoretically Absurd

A statement is theoretically absurd if it denies implicitly what it affirms explicitly—or vice versa; as when I should say: I am dead, I cannot speak, this circle is square.

3. Practically Impossible

A doctrine or attitude is practically impossible if it cannot be carried out in practice; e.g. the advice to stop breathing.

Adversaries:

a. The Greek *sophists,* who claimed that every proposition may be said to be both true and false.

b. Some *Academicians* (i.e. followers of Plato), who flatly denied that anything was certain, though they admitted probability for some propositions.

c. The chief adversary of the thesis is Pyrrho, who advised all to affirm or deny nothing, lest they fall into error.[1]

[1]To round out one's knowledge, it is advisable to look up the names mentioned in a good History of Philosophy (e.g. Turner, Behn, Klimke, Geny).

Proof of Thesis

1. That statement is absurd which denies implicitly what it affirms explicitly.

Now universal skepticism may be expressed in such a statement.

Therefore universal skepticism is absurd.

Proof of minor: Universal skepticism may be expressed in the statement: Nothing is certain, or we are never certain. But he who says this, *implicitly* says: At least one thing is certain, and we are sure of it, viz. this statement. Therefore the doctrine of universal skeptics denies implicitly what it affirms explicitly.

Objection. This argument begs the question. For unless the premises are admitted to be certain, the conclusion is not certain; now the skeptics admit nothing as certain.

A. a) This is not a proof in the strict sense of the word (see p. 107). b) The thesis is not directly addressed to the skeptics, but to such as are not yet infected with this extreme form of intellectual despair. To the ordinary sane individual the absurdity of skepticism is manifest enough.

2. That doctrine is practically impossible, which cannot be carried out in practice.

Now universal skepticism cannot be carried out in practice.

Therefore universal skepticism is practically impossible.

Proof of minor: To carry out practically the doctrine of universal skepticism, one should a) really doubt everything and b) live accordingly. But this is impossible, nor has any skeptic ever attempted it. For a) no one *can* honestly doubt in his mind about his own exist-

ence, about the existence of the world around us, about the principle of contradiction etc., though one may, of course, deny them externally. b) Imagine the *life* of a consistent skeptic: Why does he get up in the morning? Why does he eat? Why does he breathe? Why does he dodge autos? If nothing is certain or if he is not sure of anything, he should do none of these things.

Objection 1. If this argument were valid, all skeptics would be *liars;* for to lie is to say the opposite of what is in one's mind.

A. No. Skeptics imagine they doubt about everything. They, too, are certain, like other people around them; but pondering over certain difficulties, they have *argued* themselves into this absurd position.

Objection 2. The reason why skeptics do the things mentioned, is because they are *practically* certain of the effects that would follow otherwise. Now practical certitude is not yet formal certitude.

A. Dist. major: the proximate reason, *transmit;* the ultimate reason, *no.* Practical certitude ultimately rests on formal certitude and would have no meaning without it.

Corollary 1. Therefore we are *sometimes* formally certain, and something is certain. This follows clearly from the refutation of skepticism.

However, let not the student imagine that formal certitude is had but rarely, like turkey for dinner. This thesis is meant merely for philosophical reflection on the attitude of skeptics. Later we shall establish the range of formal certitude.

Corollary 2. Therefore not everything is debatable nor are there two sides to every question.

Objections of Skeptics

1. The world is full of errors.

A. But not so as to leave no room for formal certitude. Error should make us cautious, but not desperate.

2. We make *mistakes* every day. People constantly *contradict* one another; what one man affirms, the other denies. Now this would not be if we were ever formally certain.

A. Dist. major: this happens in everything, *no;* in some things, *yes.*

3. One who cannot tell whether he is right or wrong, is not formally certain. Now we cannot tell when we are right or wrong.

A. Grant major. Dist. minor: never, *no;* sometimes, *yes.* When I say that $2 \times 2 = 4$, I know that I am right and that I cannot be wrong. *How* I know this, is another question, which will be discussed later.

Schol. Universal skepticism also underlies the modern demand for *absolute* freedom of thought, speech, the press. The advocates of such unbounded freedom claim that every man is free to think, speak or write anything he pleases. Such a claim can only be upheld if there is nothing certain. For if there is anything certain, how can a man be (morally) free to think or speak or print the contradictory of it?

Thesis 2

Relativism is absurd and leads to skepticism.

Relativism is the theory which would make all truth to be *relative,* that is, dependent on and variable with time, place, age, person etc.

According to relativists, what is true today, may become false by tomorrow; what is true in America, may be false in China; what is true for Peter, may be pronounced false by Paul etc. Truth then would vary with time, place, person etc.

Says the editor of the Forum (June 1929): "American thought and conduct today is a concrete exhibit in human behavior of Einstein's theory. What is considered absolutely wrong in a village meeting, may be praised as right in a neighboring city. One group assembled at lunch condemns what another group at dinner extolls. Virtue is being measured by sliding standards instead of a fixed scale of ten commandments, and Christ's two commandments are often invoked to turn Moses' upside down."

Akin to relativism is another epistemological heresy, called *pragmatism.* This theory teaches that we never know whether a propositon is true in itself or not, but that we must be satisfied if our judgments *"work."* Thus $2 \times 2 = 4$ may be called true because it always works out well; if $2 \times 2 = 5$ worked out better, we should call that true.

As against relativism, we claim that there are some

truths which are *absolute* and independent of time, place, person etc. Once true, always true.—Not only that, but we also claim that we can know some of these truths, so that our cognition, too, can rightly be called absolute.

Observe, however, the following points:

a. Some words are often or generally taken in a *relative* sense; e.g. big and small, rich and poor etc. A boy may be big for his age, but small compared to his father. In such cases, the meaning of the word should be accurately defined.

b. Similarly, there are propositions which refer to things *subject to change;* e.g. the weather was fine (yesterday), the weather was ugly (the day before). In such cases, the time or place understood should be brought out to make the proposition definite.

c. A truth may grow on us. We may understand a truth *more fully* and completely as we grow up, or a truth may come home to us on a special occasion (e.g. during a mission or retreat). But that does not change the truth in itself, nor does it make our former cognition of it false.

d. Lastly—and this is most important for epistemology—we admit that our *way of knowing* things depends on the peculiar nature of our intellect. We abstract, make judgments, reason; not so God or the angels. But we deny that thereby *that which* we know, is changed. $2 \times 2 = 4$ for *any* intellect, no matter how it is expressed.

Proof of Thesis

1. That theory is absurd which denies implicitly what it affirms explicitly.

Now relativism is such a theory.

Therefore relativism is absurd.

Proof of minor: Relativism affirms explicitly that all truths change with time, place etc.; but implicitly it claims that this *one* statement is itself unchangeable and absolutely true.

2. A theory which implies that we can never be certain, leads to skepticism.

Now relativism is such a theory.

Therefore relativism leads to skepticism.

Proof of minor: We can only be formally certain of propositions that *cannot* be false; now relativism implies that *all* propositions may be both true and false; therefore relativism implies that we can never be formally certain.

Cor. Therefore some propositions may also be pronounced *absolutely false,* that is, false at all times, everywhere, to all sane individuals; e.g. $2 \times 2 = 5$.

Objections

1. As long as John walks, it is true to say "John walks"; but when he sits down, that same proposition becomes false. Therefore what is true, may become false.

A. a) This argument does not establish the contradictory of our thesis. We deny only that *all* our judgments are relative. b) If the relation of time or place is brought out, there is no more contradiction between "John walks" and "John sits down."

2. What one calls good, useful, beautiful, another may call bad, harmful, ugly. Think of the weather, dress, form of government etc. Therefore truth varies from person to person.

A. Such words *include* a relation to something else, often to the speaker and his viewpoints. If this relation is brought out, the contradiction vanishes. Thus rain may be good for the farmer, bad for the parade.

3. If the same things were true or false for everyone, there would be no quarrels. Now there are plenty of quarrels in the world.

A. Grant major. Dist. minor: people quarrel about everything, *no;* about many things, *yes.*

Scholion

Origin of Relativism

Relativism, which is very prevalent today, had a twofold origin:

a. *Kant's theory of cognition.* According to Kant, we can never know the "things in themselves" (noumena), but only the appearances of things (phenomena). His reason is that our cognitive faculties have their own peculiar structure, i.e. are endowed with so-called "subjective forms," on account of which we *add* something of our own to whatever we know. We say that $2 \times 2 = 4$, but only because such is the structure of our intellect; if we had a different intellect, we might or would judge that $2 \times 2 = 5$.

Obj. The "thing in itself" is the thing unknown. Now the thing unknown cannot at the same time be known. Therefore the "thing in itself" can never be known.

A. This is a pure sophism, but widely used after Kant, who invented it. We deny the major. The "thing in itself" is the thing as it is, whether it be known or not.

Kant's theory is also the basis of modern *psychologism,* which would make all our cognitions dependent on our peculiar psychology (see p. 9).

b. *Evolution.* This theory primarily teaches that natural species gradually evolve themselves from the lower and simpler forms to higher and more complicated ones. As applied to man, it teaches that our intellect is only a further development of the brain of lower animals.

An epistemological corollary of the same theory is that we now hold some propositions to be true, because we have reached the *present* stage of evolution; but millions of years ago, man may have judged the opposite to be true, and nobody can tell what man will say a million years hence.

This theory then would make truth dependent on the stage of our *intellectual development,* just as the child believes in Santa Claus, whose existence the adult denies.

Part 2

SOURCES OF CERTITUDE

The purpose of the first part was to show in a general way that we are *sometimes* formally certain. We showed this indirectly by pointing out the absurdity of two epistemological theories which deny all formal certitude, viz. of skepticism and relativism.

We now ask more definitely: *When* are we formally certain?

This question will be answered by an appeal to the various *cognitive faculties* with which nature (God) has endowed us to arrive at truth. They are the natural means by which we acquire *new* and *certain* knowledge. (By 'new' knowledge we do not exactly mean that which was never had before, but that which is not had, at least ordinarily, by any other means.) For this reason they are also called sources of certitude or cognition.

Some American psychologists seem to bear a grudge against the term *'faculty.'* You may even hear scholastic philosophy decried as *'faculty philosophy.'*

Now there may be a difference of opinion as to the (psychological) *nature* of faculties, but surely, if by faculty is meant nothing more than a connatural power of doing something, how can anyone deny their *existence?* Have we not the innate power of seeing, hearing, judging, reasoning etc.? And if so, why deny the existence of faculties? Or why deny the existence of *various* faculties, seeing that these acts are so fundamentally different from one another?

For the peculiar purpose of epistemology, Scholastics distinguish *5 sources:* consciousness, the external senses, intellect, reason, human testimony. The objects which normally correspond to them, are: present internal facts, present external facts, concepts and first principles, truths to be demonstrated, past external facts.

We shall first of all prove the infallibility of our faculties *in general,* then point out *in particular* how far the infallibility of each extends and what cautions are to be taken against error.

CHAPTER 1

The Faculties in General

Thesis 3

All our cognitive faculties are per se infallible.

1. Cognitive Faculty

a. A *faculty* is the natural power of doing something, that is, a power given us by nature for a certain purpose; e.g. the faculty of speaking, walking, seeing. Though these powers may be perfected by judicious use, they are not acquired by us, as is e.g. skill in typewriting.

b. A *cognitive* faculty is the natural power of knowing something (cognoscere = to know).

Now, to *know* is to apprehend a thing *as it is;* to apprehend a thing otherwise than it is, is to misapprehend, to err. Consequently, a cognitive faculty may also be defined as the natural power of apprehending things as they are. Hence the *purpose* of the cognitive faculty is truth.

> That which the cognitive faculty is meant to apprehend, is called its *object.* As opposed to this, we have the *subject,* which is either the whole being apprehending an object, or the faculty by which the being apprehends it.

2. All

a. There can be no doubt that we have, as a matter of fact, *several* cognitive faculties; for we all believe

that we apprehend things as they are when we see them, hear them, understand them etc.

b. Scholastics carefully distinguish two classes of cognitive faculties in man: senses and the intellect.

The *senses* are organic faculties, that is, they depend intrinsically on some bodily organ, in which and with which they work. They are either *external* (the 5 senses) or *internal* (memory, imagination etc.).

The *intellect* is an inorganic faculty, that is, it does not depend intrinsically on a bodily organ. Whereas, however, we have several senses, we have only *one* intellect; but this faculty has various functions; it apprehends, judges, reasons, reflects, abstracts etc.

c. Perfect cognition is had by us only in the *judgment,* which is an act of the intellect (mind). The other functions of the intellect, as well as all the acts of the senses, *merely apprehend* (experience) without judging in the strict sense of the word. They gather the raw material for the intellect to work over into judgments.

Now in epistemology we primarily speak of perfect cognition, which is certitude. Therefore we primarily speak about the *judgments of the intellect.*

3. Our

Epistemology is only concerned with human cognition, not with the cognition of other beings (God, angels, animals).

4. Infallible

Infallibility is the impossibility of erring, or the necessity of apprehending things as they are. One

who is infallible, not only apprehends things as they are, but he must do so. He need not apprehend always, but when he does, he must apprehend rightly.

5. Per se

"Per se" means *"as intended by nature,"* hence normally, generally, ordinarily. The opposite is called "per accidens," "not as intended by nature," "against the intention of nature," hence abnormally, not ordinarily.

Thus to the normal eye the rose appears as red; the color-blind see it as grey, which is an abnormality.

Meaning of thesis:

We claim that the cognitive faculties are given us by nature (God) for the one purpose that they may reveal to us things *as they are*. We deny a) that they are per se fallible, so that they would lead us positively into error, b) that they are indifferent toward truth and error.

> If a faculty be restricted to a special class of objects, it is, of course, infallible only within that class. You do not trust your eyes to tell you the temperature of the water in the bathtub.

Proof of Thesis

1. (With regard to the *intellect judging)*

a. We are sometimes formally certain.

Now we could never be formally certain, unless our intellect when judging were per se infallible.

Therefore our intellect when judging is per se infallible.

Proof of minor: We cannot compare our judgments with reality, because we have no higher faculty than

the intellect and no higher function than the judgment. If therefore our intellect when judging were per se fallible or indifferent toward truth and error, if its very nature were not such as to apprehend things as they are, we could *never* be certain.

Illustration. If I do not know that *photos* must, by their very nature, picture things as they are, I could never be sure by looking at a photo that the reality is like the picture. If there were a camera made purposely so as to distort reality, or at least as liable to distort as to make a correct copy, I could never trust the pictures made with it.

b. We often make mistakes when judging.

Now the very word '*mistake*' would have no meaning, unless the intellect when judging were per se infallible.

Therefore the intellect when judging is per se infallible.

Proof of minor: We do not say that a man took the wrong road when he is merely out for a walk; in that case, one road is as good as another. But we do speak of taking the wrong road when he sets out with a definite *goal* in mind.

Cor. Therefore the fact that we formulate our cognitions in judgments, does not essentially *vitiate* them.

This corollary is important, because some philosophers claim that we necessarily *distort* reality when we judge. They point out that there are no judgments outside the mind, and that, to formulate a judgment, we break up reality into S and P, whereas in reality S and P are undivided (see p. 164).

No doubt, this method of handling reality implies an *imperfection;* God does not resort to such a roundabout way. Still the imperfection affects only the *way of knowing,* not *that which* we know; if it did, skepticism would be the inevitable result.

2. (With regard to *all* cognitive faculties)

If there were a faculty which is per se fallible or indifferent, a) that faculty would be no faculty at all, b) there would be no formal certitude at all.

Now the consequent is absurd.

Therefore also the antecedent.

Proof of major: a) The very word 'faculty' implies a peculiar nature, a special purpose. b) If one faculty can be per se fallible or indifferent, all can, even the intellect when judging; but if all faculties are per se fallible or indifferent, then certitude is impossible.

Cor. 1. Therefore the *formal object* of all cognitive faculties is truth.

Cor. 2. Therefore the *abstraction* which we find in all our cognitive faculties, does not per se lead us into error. It argues imperfection in the mode of knowing reality, but not an essential defect.

That *all* our cognitive faculties abstract in some way, is evident. My eyes perceive only color, omitting all the other qualities of the object; my ears perceive only sound etc. The abstraction proper to the intellect (see p. 13) is of an essentially different type. The intellect can omit *individuality,* which no sense can; it can even represent to itself a form without any subject at all, as e.g. animality, humanity.

Still, although these modes of abstraction are not a defect *("privatio")*, yet, being an imperfection, they are apt to lead the unwary into *error*. We easily judge to be distinct what we perceive by distinct faculties, or we congratulate ourselves that we have grasped the whole when we have perceived only a partial aspect of it.

Objections

1. Only God and the Pope are infallible.

A. There is a difference. God's infallibility is absolute, due to Himself alone; our infallibility is due to God and very limited.—The Pope's infallibility is a special divine privilege; ours is a gift of nature common to all men.

2. If all our faculties were infallible, error would be impossible. Now error is not only possible, but a reality.

A. Dist. major: if they were absolutely perfect, *yes;* since they are finite and imperfect, *no.*

3. To be formally certain, it is not only necessary that the faculties be infallible, but also that the intellect when judging be *aware* of this infallibility. Thus if one does not know the mechanical precision of the camera, a photo will mean no more to him than a drawing.

Now the intellect does not know this infallibility.

A. Dist. major: it is necessary that the intellect be aware of this infallibility either implicitly or explicitly, *yes;* explicitly, *no.*

This *implicit* recognition of its own infallibility is had in the very act of judging. When the intellect judges, it becomes aware of its own nature, viz. that it is made to judge in accordance with reality.[1]

Schol. 1. The metaphysical principle on which the thesis rests, is the principle of finality: *"Everything is made for a purpose."*

[1] This is the solution of S. Thomas (De Veritate qu. 1 a. 9). It alone renders superfluous that comparison with reality which Kant and his followers demand.

Schol. 2. The thesis does not rest on the scientific or philosophic explanation of the '*mechanism*' of cognition. Else there would have been no formal certitude before scientists and philosophers had finished their inquiries. As a matter of fact, these inquiries are of comparatively recent date, and many questions are even now disputed. But mankind existed and was formally certain of many things thousands of years before scientists and philosophers set to work.

Hence it is wrong to say that epistemology *rests* on psychology. This would be putting the cart before the horse.

CHAPTER 2

The Single Faculties

I. CONSCIOUSNESS

1. Definition

Consciousness is the faculty (or act) by which we experience our present internal acts as ours.

To explain:

a. To be conscious of something, means to be aware that something is going on *within* ourselves. We are not directly conscious of anything outside of ourselves.

b. Consciousness *experiences* its object.

Experience is immediate cognition of an actually existing object in the concrete. That is to say: a) experience is not reasoning, but cognition without the aid of a syllogism. b) We cannot experience except what actually exists. c) We experience the object with and in its individuality, not in the abstract; a toothache hurts worse than its definition.

c. Consciousness reveals to us our acts *as ours*. We are not merely passive onlookers; consciousness reports to us the act as being our act, not as hanging in the air or as merely somebody's. Hence we do not say: There is a toothache, or somebody has a toothache, but I have a toothache. (This is the answer to Wundt, James etc., who would admit only a "stream of conscious acts.")

What is the psychological nature of consciousness, is rather obscure; hence we say in the definition "faculty

or act." But this obscurity need not worry us in epistemology. (Cf. Fröbes, Psych. spec. I p. 145-153, 201-206; II p. 46-48).

2. Existence

That we are conscious of many of our acts and that we therefore have consciousness, is so evident that scarcely anybody has ever denied it. All the judgments whose subject is 'I' and whose tense is the present, are derived from consciousness (introspection). So are those whose subject is 'I' and whose tense is the past, though these involve another faculty also, viz. memory (retrospection).—Besides, we all know and say that sometimes we are conscious, sometimes we are not (e.g. in sleep, under ether).

3. Object of Consciousness

a. The proper object of consciousness are our own "present internal facts," i.e. our thoughts, desires, judgments, emotions, decisions, affections etc.

But a) consciousness as such advises us only of their actual presence within us; it says nothing about the *nature* or the *cause* or the *precise location* of these acts. b) Consciousness says nothing about our *past* or *future* internal acts. c) Consciousness does not report *all* internal acts; thus we are not conscious of the process of digestion, of the circulation of blood etc.

b. At least some of our conscious acts (e.g. thoughts, desires) have their own object, as when we think of the Sacred Heart. Such direct objects of internal acts are called the *indirect* object of consciousness.

Thesis 4

Immediate judgments of consciousness are absolutely infallible.

1. Immediate Judgments of Consciousness

An immediate judgment is one at which we arrive *without* the aid of a middle term. Those at which we arrive only with the aid of a middle term, are called mediate judgments; they are conclusions of syllogisms.

Immediate judgments of consciousness then are those in which we do not reason from our internal facts, but merely put in sentence-form the facts which we experience within ourselves. Such are: I see, I hear, I wish, I hope etc.

> Therefore the word 'immediate' here does not refer to time, although, as a matter of fact, these judgments are immediate also in the sense that they follow closely upon perception.

2. Absolutely infallible are those judgments which must be true under *all* conditions.

Adversaries

1. Herbert Spencer, August Comte, American Behaviorists (e.g. Watson) deny that we can trust consciousness. Some of them even go so far as to deny the existence of consciousness.

2. Those who admit a *"double personality"* in human beings. Dual personality would consist in this that one set of facts would be reported to one Ego, another set to a second Ego.

According to the Associated Press, a Protestant minister was recently convicted of perjury and of making a false inheritance tax return. He claimed he possessed a dual personality. His executive self, he said, could not obtain information from his individual self. The argument did not impress the jury.

Proof of Thesis

The only error to which consciousness could be subject, would be to mistake appearances for reality (as happens e.g. in the external senses).

Now for consciousness, appearances and reality are the same; for consciousness is meant precisely to tell us how things appear to us.

Therefore consciousness is not subject to error.

SCHOLION

Interpretation of Facts

Although we cannot err as long as we rely on consciousness, yet error may slip into the interpretation of our conscious acts. Now every judgment, even if immediate, implies some interpretation. For, in every judgment we classify, bringing the subject (S) under a general, *abstract* concept.

But now a) a man's abstract concepts may be confused, b) the internal facts themselves may be similar and hence easily confused (e.g. toothache and neuralgia, acts of the imagination and intellect), c) one may be careless and hasty in the classification. Moreover, d) when a man wishes to manifest his internal acts to somebody else, the difficulty is even greater; for there may also be a defect in his vocabulary.

Still, it is clear that all these possible impediments do not pertain to consciousness *as such*. All we claim is that, as long as a man merely enunciates what consciousness reports to him, his judgment cannot err.

Objections

1. To insane people consciousness often reports things which are not so; e.g. that they are kings, that they have a stomach of glass etc. Therefore even immediate judgments of consciousness can be false.

A. Insane people habitually *misinterpret* that which consciousness reports to them.

2. Those who had an arm or leg amputated, often complain of a pain in the amputated limb. Now they certainly have no pain in the amputated limb.

A. Consciousness reports to these people the presence of pain, which is true. Another question is *where* the pain is located. But the precise location of an internal fact does not pertain to the sphere of consciousness. In the case mentioned, the pain, owing to imagination, is referred at first to the amputated limb; after some time, this error of the imagination is corrected and disappears.

3. Some people imagine they are sick.

A. Sometimes such people are really sick, though perhaps not of the sickness of which they complain; they may err with regard to the nature or cause or exact place of the sickness, which lie outside the sphere of consciousness.—It may also be that a man by a series of reflex acts, persuades himself that he is sick.

4. If consciousness were absolutely infallible, we could never doubt our internal facts. But we often doubt. Thus we sometimes doubt whether we are awake or dreaming; at other times we doubt whether or no we have yielded to a temptation, whether we are really sorry for our sins etc.

A. Dist. major: as far as immediate judgments are concerned, *yes;* in other judgments, *no*. The judgment that I am awake (and not dreaming) is based on the orderliness, cohesion, rationality of both internal and external facts. Hence it is not

an immediate judgment. Doubts in the other two cases are due to misinterpretation of facts which are very similar.

5. If consciousness were a source of cognition, the subject of cognition would become the object. Now the subject cannot become its own object (H. Spencer).

A. Grant major. Deny minor. Consciousness is a fact, and in consciousness, I, the subject, become aware of an act of mine as mine. Contra factum non valet argumentatio.

II. THE EXTERNAL SENSES

Thesis 5

The world of bodies which we perceive with our senses, is real and knowable.

1. *Bodies.* For the purpose of our thesis, it is sufficient to define bodies as *"extended things";* for although bodies manifest many other attributes (e.g. they are also heavy, colored, resisting), yet extension is the most common. But we are not now concerned with the precise nature of bodies; that is a special problem of cosmology.

2. *Real* is that which exists or can exist independently of our cognition. We claim, of course, that the world of bodies exists actually.

3. *Knowable* is that which can be known, at least to some extent; viz. so that some things (P) may be predicated of it.

Adversaries

1. *Acosmistic idealism* denies outright that the world of bodies in which we live, is real. It is called 'idealism' because it teaches that bodies exist merely *as* known, *as* objects of cognition, *as* ideas.

Now, we certainly seem to perceive bodies all around us: men, trees, houses, horses etc. Moreover, some of them seem to us stationary, others appear to move; when we ride in a train, the landscape seems to change constantly; we visit certain places for their beauty; e.g. Niagara Falls.

These are facts, testified by our consciousness and *admitted* by idealists. Therefore idealists are obliged to assign a reason why these things appear to us as they do; for idealists also *admit* the principle of sufficient reason ("whatever is, has a sufficient reason why it is so"). If this world of bodies is not real, then why do we see it as we do?

Acosmistic idealists differ in the answer which they give to this last question:

a. *Subjective idealists* (Neo-Platonists) maintain that we ourselves are the cause of all the phenomena described. This world is merely a dream of ours; it is no more real than are the things which we see in our dreams.

b. *Objective idealists* (Berkeley) claim that God Himself produces these phenomena in our soul, and that thereby we are led to believe in the existence of a bodily world.

2. *Kant* admits that things exist outside of us and that they cause our sense perceptions, but he denies that we can ever know what these things really are. We cannot say for certain that they are substances or true bodies or changeable or living etc.

This theory is called *transcendental* idealism.

Meaning of thesis:

The existence of a world of bodies really needs no proof; it is immediately evident. But seeing that idealists deny it and yet admit certain other things, we argue against them from their own admissions (argumentum ad hominem).

Proof of Thesis

1. Against *Subjective* Idealism

If there were no world of bodies outside of us and we ourselves were the sole cause of our sense perceptions, then there would be no reason a) why a blind man should not be able to see things as well as we do, b) why all people agree in seeing the same world, c) why we should not be able to perceive anything we wanted to perceive, d) why we should perceive anything we do not want to perceive.

Now there must be a reason for all these facts.

Therefore the world of bodies is real.

Obj. 1. There is no difference between the world we see in our *dreams,* and the world we see when awake. Now we are the sole cause of the world of our dreams. Therefore also of the world we see when awake.

A. Deny major. The world we see in our dreams, is unconnected, without order, irrational (see p. 130); not so the world we see when awake.—Besides, unless we had first perceived the actual world, we should have no dreams of a world of bodies—as the blind man who never saw any colors, does not dream of colors.

Obj. 2. At least, we cannot be sure that we ourselves are not the cause of the world we see, unless we know all our powers. Now we do not know all our powers.

A. Dist. major: unless we know all our powers negatively, *yes;* positively, *no.* Knowing our powers negatively means that we know that we cannot do certain things (e.g. jumping over the moon); knowing them positively means that we know what we can do (e.g. jumping over the fence).

2. Against *Objective* Idealism

If God produced the sense perceptions within us, He would positively lead us into error, and this error would be moreover invincible, cruel, pernicious.

Now it is against God's veracity, goodness, wisdom, holiness to lead us into such an error.

Therefore God does not produce the sense perceptions within us.

Proof of major: a) God would lead us into *error;* for He would lead us to judge that there is a world of bodies outside of us, although there would be none. b) God would not merely permit this error, but *positively* lead us into it; for there could be no other motive for God's action except to deceive us.—Moreover, this error would be a) *invincible;* for the sense perceptions are so regular, uniform and orderly that no one suspects them of being a sham; b) *cruel;* for on the existence of the world of bodies depends so much of our joy, hope, pleasure, which would all be vain if no world existed; c) *pernicious;* for there would then be no visible Church, no sacraments etc.

Obj. 1. In explaining facts, we must not assume more causes than are necessary ("entia non sunt multiplicanda sine necessitate"). Now, to explain our sense perceptions, it is sufficient to assume God's influence; for He can certainly produce them. Therefore there is no need of postulating a world of bodies as cause of our sense perceptions.

A. Grant major. Dist. minor: if God's power be considered absolutely, *transmit;* if God's power is considered as guided by His veracity, goodness, wisdom etc., *no.*

Obj. 2. God leads us into error in the Bl. Eucharist; for, to judge by our senses, there is bread and wine on the altar even after consecration. Therefore God can lead us into error also with regard to the world of bodies.

A. Deny antecedent. God does not lead us into error in the Bl. Eucharist. He works a miracle, but He also tells us in what the miracle consists, lest we be deceived.

Schol. The argument against objective idealism supposes the *existence of God,* but only because the adversaries themselves suppose and grant it. But there is really no need of appealing to God in order to make sure that the world of bodies exists. Just open your eyes.

In this connection, two other theories must be mentioned:

a. *Descartes,* a French philosopher, admits the existence of the world of bodies, but thinks it incumbent on himself to *demonstrate* it.

To show the urgency of such demonstration, he conjures up a difficulty of his own making. Our sense perceptions, he muses, might be due to an evil genius, so that the whole outer world would merely be a *"diabolical illusion."* Then, in order to rid himself of this objection, he first proves God's existence and veracity, and thence concludes that our sense perceptions must be true.

But such demonstration is futile and abortive. a) If the devil can deceive me in my sense perceptions to the extent Descartes imagines, he may also mock me when I try to prove to myself the existence and veracity of God. Why not? b) The supposition that the world is merely a diabolical illusion, is utterly absurd and leads to skepticism.

b. *Malebranche,* another French philosopher, thinks we are sure that the world exists only because God has revealed it in *Holy Scripture.* For, there we read in the first book of Genesis: "God made heaven and earth."

Also this proof is abortive. For Holy Scripture is a book and therefore itself a *body*.

3. Against *Transcendental* Idealism

Unless bodies have the attributes which the normal senses perceive in them, our senses lead us positively into error.

Now the senses are not given us by nature to lead us positively into error.

Therefore bodies have the attributes which the normal senses perceive in them.

Thesis 6

Under normal conditions, our external senses are infallible with regard to the proper and common sensibles.

1. External Senses

The external senses are organic faculties by means of which we perceive the world of bodies around us. They are called *'external,'* because their organs are on the surface of our body, and because their primary purpose evidently is to inform us about bodies outside of us.

Like consciousness, the senses do not judge; they merely apprehend. Nor do they perceive their object in the abstract, but in the concrete. Thus we never see color in general, but always this particular color. In other words, senses, like consciousness, *experience* their object (see p. 126).

How many external senses we have, is immaterial now. As a rule 5 are enumerated: sight, hearing, taste, smell, touch.[1]

The act by which senses apprehend their object, is called *'perception'* or *'sensation.'*

2. Proper and Common Sensibles

Whatever can be perceived by a sense, is called by the Scholastics a *'sensible';* today it is often called a *'sensum.'*

---

[1] See Fröbes, Psych. spec. I p. 106-108.

But Scholastics further distinguish between proper and common sensibles.

a. A *proper* sensible is one which can be perceived by only one sense. The proper sensible for sight is light (or color), for hearing sound, for smell odors etc.

The proper sensible of each sense is also called its *formal object,* because the sense cannot perceive anything unless it contains the proper sensible; thus our ears cannot function where there is no sound.

There are, of course, as many proper sensibles and formal objects as there are senses.[1]

b. A *common* sensible is one which can be perceived by more than one sense; e.g. figure, size.

3. Normal Conditions

The conditions under which our external senses are infallible, pertain partly to the senses themselves, partly to the object, partly to the medium through which the object is perceived.

a. The *senses* themselves must be normal. If a sense organ is abnormal either permanently (e.g. through colorblindness) or temporarily (e.g. the eye after gazing at the sun), it is not reliable, and I must refrain from judging of the outer world in accordance with its testimony.

Also the sense *impression* must not be too brief, as happens e.g. in a fast moving train, in moving pictures etc.

b. The *object* must be proportionate to the sense; it

[1]The proper sensible corresponds to what modern psychologists call the "quality" of a sensation.

must neither be too small nor too far away nor too obscure. Our eyes are neither telescopes nor microscopes nor X-ray apparatus.

c. The *medium* (if there be any) must be normal; e.g. daylight for vision, air for hearing etc.

d. With regard to the common sensibles, a further condition is required, viz. that the object be examined by *all* the senses which can perceive it.

Adversaries

Descartes, Montaigne, de Lamennais profess to distrust our senses completely because we are so often deceived by them.

Proof of Thesis

All our cognitive faculties are per se infallible with regard to those objects for which they were intended by nature.

Therefore under normal conditions, they must be actually infallible.

Now our external senses are cognitive faculties, and the objects of which they were intended by nature to inform us, are the proper and common sensibles.

Therefore under normal conditions, our external senses must be actually infallible with regard to the proper and common sensibles.

Proof of first conclusion: "Normal conditions" precisely means that everything is as it should be according to the intention of nature. Now if an error could occur even so, the cognitive faculty would be useless.

Proof of minor:

a. That our external senses are really *cognitive* faculties (i.e. given us by nature to apprehend things as they are), is the common belief of mankind; we all believe that we learn something about bodies by seeing them, touching them etc.

b. The primary object for which the senses were evidently intended by nature, are the *proper* sensibles; for these cannot be perceived by any other sense.

c. The secondary object for which the senses were intended by nature, are the *common* sensibles; for the perception of the proper sensibles varies with the common sensibles.

Objections

1. To the colorblind, red objects appear as grey.

A. Granted. But this is due to a defect of the organ; hence it is said to be "per accidens," i.e. not as intended by nature (see p. 121).

2. According to modern science, colors and sounds are nothing more than very fast vibrations of the ether or air. Now even under normal conditions, we do not perceive these vibrations, but something altogether different, viz. colors and sounds. Therefore even under normal conditions, our senses lead us astray.

A. See next thesis.

3. An oar dipped slantwise into water appears broken.

A. This pertains to the figure of the oar; but the figure of a body is a *common* sensible; hence to be sure of it, the body should be examined by more than one sense.

4. We see the sun even after it has actually disappeared below the horizon, and we still see stars in the sky which, according to astronomers, were extinguished long ago.

A. This refers to the *place* of a body; now the place of a body is neither a proper nor a common sensible. Cf. Fröbes, Psych. spec. I p. 186-200.

Schol. Errors of the Senses

What are ordinarily called errors of the senses, are easily explained, and the explanation is accepted today. They are really errors of the *intellect*. The external senses, in their normal state, never perceive anything except what is presented to them; nor can they perceive their object other than it is.

But our imagination adds many other things, either from its own or from other senses or from memory. This is today called *'apperception.'* In order to make sure of what we really perceive, we must guard against letting these additions unduly influence our judgments.

With regard to the common sensibles, we must remember that, according to the laws of physics, our eyes cannot perceive an object otherwise than they do. For instance, according to the laws of light, we must see the railroad tracks as converging, though in reality they are parallel; even after we know that they are parallel, our eyes continue to see them as converging. The same is true with regard to the laws of sound etc.

But a little experience soon convinces us that we must not be satisfied with the testimony of only one sense.

Thesis 7

The proper sensibles, especially colors and sounds, exist formally outside of our perception.[1]

1. Proper Sensibles

What the proper sensibles are, was explained in thesis 6. If we have 5 external senses (as is generally assumed), there are, of course, 5 proper sensibles.

However, in the present thesis we single out two, viz. *colors* and *sounds*. This for various reasons: a) very little is known even today of the others; b) colors and sounds, more than the others, appear to us to be real and to exist independently of our perception of them; c) the opponents of this thesis mass their attacks on these two.

2. Formally

This means that colors and sounds exist outside *as they are perceived* (of course, by the normal senses), not under some other form (e.g. merely as vibrations). Thus when my eyes perceive the rose as red, we claim that they do not make up the color or add anything to what exists independently of my perception, but that the red exists as such.

> We do not touch the further question what is the physical or metaphysical *nature* of the proper sensibles; that pertains to the various sciences and to philosophy. Scientists claim today that colors and sounds are always accompanied by *vibrations* of some medium.

[1] A fuller discussion of this thesis may be read in the author's "Cosmologia."

If they can prove it, well and good; it does not conflict with our thesis. Similarly, it is the business of philosophers to find out under what *category* the proper sensibles are to be classified: whether they are substances or accidents, and if accidents, of what kind etc. We only prove that they are *real* beings, not mere fictions of the imagination.

3. Outside of Our Perception

This means that that which the normal sense perceives as objective, exists *independently* of the perception; hence it may exist as such even when nobody perceives it.

We do not touch the further question *where precisely* the proper sensibles exist. This question is freely discussed today by scientists. Briefly, with regard to colors the problem is this: Supposing that color is a modification of light, and light a modification of ether, where precisely is that modification of the ether which the eye perceives? Is it at the surface of the body which we call colored? Or is it at a certain distance from the eye? Or is it at the retina of the eye, as some assume? As is plain, any of these locations would be "outside and independent of my perception."

Adversaries:

The thesis is denied today by most scientists and by some philosophers, even Catholic.

According to these, colors and sounds exist merely *causally* or *fundamentally* outside of our perception, not as we perceive them. Colors, they say, are merely transverse vibrations of the ether; but when these vibrations strike my eye, I see color (just as I see colored stars when somebody hits my eye with the fist). Likewise, they say, sounds are merely longitudinal waves of the air; but on striking our ears, they

are transformed into sound (just as one hears a noise when his ears are slapped).

Proof of Thesis

1. Unless the proper sensibles existed formally outside of our perception, our external senses could not be called *cognitive faculties.*

Now our senses are cognitive faculties.

Therefore the proper sensibles exist formally outside of our perception.

Proof of major: Unless the proper sensibles existed formally outside of our perception, our senses would *per se* perceive their object other than it is. Now to perceive things other than they are, is not cognition, but an illusion. Therefore unless the proper sensibles existed formally outside of our perception, the senses could not rightly be called cognitive faculties.

Proof of minor: a) This is the common persuasion of mankind; hence it is to be retained unless convincing arguments to the contrary are forthcoming. b) All our intellectual cognition begins with sense perception ("nihil est in intellectu nisi quod prius fuerit in sensu"). Can we suppose that it begins with illusions? c) The adversaries admit that our senses are cognitive faculties with regard to the common sensibles. Then why not also with regard to the proper sensibles? Especially since we cannot perceive the common sensibles without first perceiving the proper sensibles.

2. Kant's theory of cognition is or leads to idealism.

Now the theory here rejected is implicitly the same as Kant's, at least as regards colors and sounds.

Therefore this theory, too, is or leads to idealism.

Proof of major: a) The major is admitted by all Catholic philosophers. b) According to Kant, our cognition positively changes the object by always adding something foreign to it, yet so that we cannot tell what in our cognition is due to the subject and what to the object. But this is or leads to idealism.

Proof of minor: According to the new theory, color consists in mere vibrations, mere locomotion, mere change of place. Yet we see something altogether different. Whence this something? Do we add it of our own? But then our senses positively change reality, and we have Kant's theory of cognition.

Objections

1. This whole question about the objectivity of colors etc. pertains to the natural sciences (physics, physiology, psychology), not to epistemology.

A. Dist. as far as the reality of colors etc. is concerned, *no;* where there is question of the proximate nature, *yes* (or *transmit).* The present question concerns the ultimate purpose of our senses; but the ultimate purpose of our faculties pertains to epistemology, not to the sciences.

2. The purpose of our external senses is *biological;* they have been given us by nature for the preservation of the individual and the race.

But this purpose can be attained even if the proper sensibles do not exist as such outside of our perception.

A. Dist. major: is also biological, *yes;* is purely biological, *no.* In man (whatever may be said about brute animals), the external senses are *also* given by nature for the needs of the intellect, whose object is truth.

3. Physicists have proved by a thousand experiments that colors and sounds are merely *vibrations* of some medium.

A. Dist. they have proved that colors and sounds are always

joined to vibrations of a definite kind, *transmit;* that they are nothing more than vibrations, *no.*

How, you ask, do we know that colors and sounds are *more* than vibrations? We answer: Because our eyes and ears tell us so.

4. The senses apprehend indeed the vibrations of the medium, but because these are so *rapid,* the senses cannot apprehend them as vibrations, but as colors and sounds (just as the eye sees the spokes of a rapidly revolving wheel as a surface).

A. This is falsifying the object. The senses would thus be like a witness who cannot remember the facts, and therefore relates a story of his own invention.—The example of the wheel is not pertinent, because this happens only per accidens.

5. The eye sees colors also when it is struck by the fist, and the ear perceives sounds when it is slapped. Now there is no difference between these phenomena and our ordinary perceptions.

A. Transmit major. Dist. minor: there is no difference psychologically, *transmit;* from the standpoint of epistemology, *no.* Neither eyes nor ears are given us by nature to be punched and pommelled; therefore the facts cited are outside the purpose of the senses.

Schol. Primary and Secondary Qualities

Instead of proper and common sensibles, it is more customary (since Locke) to speak of primary and secondary qualities. The change is significant. What are called the primary qualities, are not the proper, but the common sensibles; the proper sensibles are called secondary qualities. The reason is precisely the error rejected in this thesis, viz. that only the *primary* qualities are real and objective.

There seems to be no reason for departing from the Scholastic view of sensible qualities, and hence it is also better to abide by their terminology.

III. INTELLECT

Under this head we shall discuss the validity a) of ideas in general, b) of universal ideas, c) of first principles.

Thesis 8

Not only is idealism absurd, but our ideas are per se objectively valid.

1. Idea

An idea or concept is not the same as sense perception, though the two are often confounded by modern, especially English, philosophers. Ideas pertain to the *intellect,* a spiritual faculty; sense perception pertains to the senses, which are organic faculties.

Nor is the idea the same as a judgment. A judgment supposes two ideas and joins or separates them, after they have been compared with each other.

Subjectively, an idea is an act of the mind (intellect) by which we conceive something; objectively, it is that which is conceived (see p. 12).

2. Objective Validity

An idea is said to have objective validity (to be objectively valid) if something *real* corresponds to it, i.e. if that which is conceived, is or can be something independently of the idea, or at least if there is a real foundation for the idea.

Thus, if I conceive 'house' as a 'structure fit to dwell in,' my concept is objectively valid; for there really are

such things, whether I think of them or not. On the contrary, my dreams have no objective validity; nor have the fancies of poets (e.g. the gods and heroes of Homer); for nothing corresponds to them in reality.

3. Idealism

The word *'idealism'* has many different meanings (cf. Standard Dictionary). In epistemology, it denotes the theory of those who deny or doubt that our ideas are per se objectively valid.

a. *Kant.* Kant seems to admit that there are things existing independently of our cognition; he certainly admits that we have ideas. But he thinks that our mind is by nature equipped with *"subjective forms,"* owing to which we always *add* something of our own to the thing known (just as one wearing blue glasses sees everything blue). Whence he concludes that we can never tell what or how things are in themselves (just as one wearing blue glasses could never tell what is the true color of a flower).

b. *Fichte, Schelling, Hegel.* Going beyond Kant, these German philosophers deny flatly that anything is real except our ideas, and hence that anything corresponds to them. According to them, our ideas are worth no more than dreams; our speech is the babble of dreamers.

Observe. Idealism, as understood in epistemology, really takes its name from this that it places the idea as an *intermediary* (medium quod) between the object and the mind. According to idealists, we do not perceive the object itself, but merely the idea of the object

(just as in dreams). Hence arises the necessity for idealists to inquire if the idea corresponds to the object; for the idea might possibly distort or misrepresent the object (as our dreams do). Idealists thus put themselves in the position of a man who sees a picture, but cannot tell whether it is a photo or the vagary of a jazz artist.

> Scholastics, as a rule, hold that the idea is a *medium quo* or *in quo*. But this point is not insisted on here. As will be seen, our proofs are independent of the (psychological) question what *kind* of medium the idea is.

Meaning of Thesis:

a. The thesis has a *negative* part, in which idealism is refuted, and a *positive* part, in which the objective validity of our ideas is defended.

b. We do not claim that all our ideas are objectively valid; to some nothing may correspond in reality. Nor do we speak of any ideas in particular. We only maintain that our ideas are *per se* objectively valid, i.e. the reason why we have ideas at all, is to know *reality* through them, to get in touch with reality. This is their *purpose*, even though it may at times be frustrated.

c. Our ideas result either by direct abstraction from the data of experience, or are the fruit of reasoning. The former are called *"primitive ideas,"* and it is of these that we primarily speak in the thesis. That the latter, too, may have objective validity, will follow more particularly from the thesis on reasoning (thesis 12).

Proof of First Part

1. A theory which denies explicitly what it affirms implicitly, is absurd.

Now idealism is such a theory.

Therefore idealism is absurd.

Proof of minor: Idealism denies explicitly that our ideas are objectively valid; yet it admits the same implicitly, viz. by supposing that we have ideas and that we know anything about them; for how can idealists suppose this except by means of ideas as objectively valid?

2. A theory which would make out all our statements to be lies, is absurd.

Now idealism is such a theory.

Therefore idealism is absurd.

Proof of minor: One who asserts more than he knows, tells a lie. Now according to idealism, we always assert more than we know (just like the dreamer who would assert that his dreams are reality).

Proof of Second Part

Sometimes we are formally certain.

Now we could never be formally certain unless our ideas were per se objectively valid.

Therefore our ideas are per se objectively valid.

Proof of minor: a) Unless at least *some* of our ideas were objectively valid, all our judgments would clearly be valueless; for the judgment supposes ideas. But to say that all our judgments are valueless, is downright skepticism. Therefore, unless at least some of our ideas were objectively valid, we could never be formally certain. b) Unless our ideas were *per se* objectively valid, we could never know which are ob-

jectively valid and which are not; we might perhaps guess at it. But unless we know for sure that the ideas utilized in a definite judgment are objectively valid, the judgment itself is not certain.

Objections

1. Ideas are something subjective (within us). Therefore they can tell us nothing about reality.

A. Dist. antec. something purely subjective (like a toothache), *no;* something subjective whose purpose is to put us in touch with reality, *yes.*

2. All we know is our own ideas. Our mind can never go out of itself to see if things are as we conceive them.

A. No. Our ideas are given us by nature that we may know reality in its various shapes. Nor is there need for the mind to 'go out of itself'; by reflection we are aware that our mind is of such a nature that we necessarily apprehend (at least in direct abstraction) things as they are.

To illustrate. Suppose a friend of yours sends you a photo of St. Peter's at Rome. You are sure that St. Peter's looks like the photo; you need not go to Rome to be sure of it; you know that photos must, owing to physical laws, represent things as they are. Similarily reflection tells us that it is the law of our intellect to mirror reality (see p. 124).

3. To make sure that our ideas are objectively valid, we ought to compare them with the things they represent. Now such comparison is evidently impossible.

A. Deny major. Because we know the nature of cameras, we are sure that the reality is as the photo shows it to be; we do not have to compare photo and reality.

> Every judgment logically supposes a comparison between S and P (see p. 11). But idealists talk about another comparison, viz. between the judgment itself and reality. To compare these directly (as we would a bungalow with its picture in the advertisement), is clearly impossible; we should need a faculty above the intellect. But we can and do compare them *virtually,* viz. by reflecting on the nature of our mind.

Thesis 9

Universals are neither mere words nor mere figments of the mind, nor yet do they exist as such outside of our mind.

1. Universals

In thesis 8 we defended the objective validity of ideas or concepts in general. But universal ideas, owing to their special nature, call for special treatment. Hence in this and the next thesis we shall discuss the objective validity of universal ideas.

It is customary, however, to speak of *universals* rather than of universal ideas. The reason is methodological. As we shall see presently, some philosophers deny that there are universal ideas, admitting only 'common terms.' Hence prior to proving the existence of universal ideas, we use the term 'universal' *vaguely* as "one thing which can be predicated of many"—whether it be now a word or an idea.

2. The Problem of Universals

That we have and constantly use common terms, no one denies. They make up by far the greater part of our vocabulary, as any dictionary shows.

But what is their meaning? What corresponds to them independently of our speech? Above all, have we also universal concepts? And if so, are they, too, objectively valid and how far?

Needless to say, the problem is not concerned with any universals or universal concepts in particular. We speak of the universals *as such,* though of both direct and reflex universals (see p. 14).

3. Three Wrong Solutions

a. *Nominalists* hold that universals are *mere words* and can be no more. They admit, of course, the existence of common terms, but they deny flatly that there are corresponding universal concepts in our mind or that things themselves are in any sense universal.

Nominalism is widespread today, especially among English-speaking philosophers.

b. *Conceptualism* is less radical. Conceptualists admit that we have and use common terms; they also admit that we have corresponding universal ideas. But they deny that universal concepts have any objective validity. To them universal ideas are mere fictions or *figments of the mind.*

The principal conceptualist of our times is *Kant.* According to him, universality is one of those "subjective forms" (categories) which the mind adds to the data of the senses, though there is no objective reason for it.

c. *Exaggerated realism* insists strongly that we have universal ideas and that they are objectively valid. But it exaggerates this validity. According to it, things themselves are full-fledged universals.

But when asked where and how universal things exist, the advocates of this theory differ in their answer: a) According to *Plato,* the universals exist in some 'heavenly place,' while the objects which we see

around us, are merely imitations of them. b) *William of Champeaux* taught that the universals exist in each individual, so that e.g. Peter would be made up of a universal man plus an individuality of his own.

Proof of Thesis

1. *Against Nominalism*

a. If we had no universal concepts, we should have no common terms.

Now we have common terms (e.g. man, horse, flower —in fact, most of the words in any language are common terms).

Therefore we also have universal concepts.

Proof of major: Terms and words are natural signs of our thoughts, and as our thoughts, so our speech. Therefore, if all our concepts were singular, all our terms should be proper (like Julius Cæsar).

b. If the reflex universals (e.g. genus, species, class) were mere words, science and philosophy would at most be a well-constructed language.

Now the consequent would be the death-knell of both science and philosophy.

Therefore also the antecedent.

Obj. 1. Whatever exists by itself, is singular. Now all our concepts exist by themselves. Therefore they are all singular.
A. Grant major. Dist. minor: our concepts considered subjectively, *yes;* objectively, *no.*

Obj. 2. There is nothing in the intellect except what was in the senses (see p. 13). Now in the senses there is nothing universal; for the senses experience only the singular (see p. 126, 138). Therefore there is nothing universal in the intellect.
A. Dist. major: except what was in the senses in the same way, *no;* in some way, *yes.*

Schol. Scholastics carefully distinguish between a) strictly universal concepts, b) analogous concepts, c) the concept of God as known through revelation. The (intrinsically) *analogous* concept, though one, is not predicated of many in exactly the same sense, whereas the strictly universal concept is (see p. 18). The concept of *God* is not predicated of the three persons of the Bl. Trinity so that there would be three Gods; a strictly universal concept is predicated of many so that they constitute a number and can be counted.

A strictly *universal* concept, therefore, is defined by Scholastics as "one thing capable of being predicated of many in the same sense and of being multiplied in them." Briefly: "One in many," "one and many."

The word 'many' here must be taken to mean all of a class; hence 'universal' concept.

2. *Against Conceptualism*

If our universal concepts were mere figments of the mind, a) our logical judgments would be per se false, b) science and philosophy would be without value.

Now the consequent cannot be admitted.

Therefore neither the antecedent.

Proof of major: a) A logical judgment is one whose predicate is a universal (e.g. Peter is a man). Now if universals were mere figments, I would say that I conceive Peter as a man, but whether or no he is a man, I have no means of telling. b) The ultimate purpose of both science and philosophy is the construction of predicamental trees, which are based on reflex universals; therefore, if the reflex universals are pure fictions, so is science and philosophy.

Cor. Therefore our universal concepts (direct and reflex) must have some objective validity.

Obj. There is nothing that could be both one and many. Now if something in reality corresponded to our universal concepts, it would have to be both one and many. Therefore nothing corresponds to our universal concepts.

A. Dist. major: under the same aspect, *yes;* under different aspects, *no.* The unity of the universal is logical, the multiplicity is real.

3. *Against Exaggerated Realism*

Nothing that exists by itself (i.e. independently of our cognition), can be both one and many under the same aspect.

Now if universals existed as such, they would have to be both one and many under the same aspect; for the universal is "one in many," i.e. one identified with many.

Therefore universals cannot exist as such by themselves.

Proof of major: Whatever exists by itself, is individual, i.e. divided from everything else.

Obj. Our universal concepts are objectively valid. Now they would not be objectively valid, unless universals existed as such outside of our cognition.

A. Grant major. Deny minor. The positive solution of this difficulty is to be found in the next thesis.

Thesis 10

That which we conceive by the direct universal concept, is real, though not in the manner in which we conceive it. The reflex universal concepts, however, are figments of the mind, though they, too, are based on reality.

The solution of the problem of universals which is here offered, is called *moderate realism* and represents the *common* teaching of Scholastics. It is the only solution that does not lead us into absurdities.

As is clear from the wording of the thesis, we do not claim the same objective validity for all our universal concepts, but distinguish sharply between direct and reflex universals.

a. As regards the direct universal, we distinguish between *that which* we conceive, and the *manner* in which it is conceived. And we claim that that which is thus conceived by the mind, exists or can exist independently of our concept; but we deny that it can exist as it is conceived, i.e. without any individuality.

b. As regards the reflex universal, we grant that even *that which* is conceived, is a figment of the mind, and that therefore nothing corresponds to it in reality. Nevertheless, we claim that there is something in the things themselves which gives us the right to construct such figments. This is meant by saying that the reflex universal concepts are based on reality, have a *foundation* in reality.

Proof of First Part

a. If *that which* we conceive by our direct universal concepts, were not real, our logical judgments would be per se false.

Now our logical judgments cannot be per se false.

Therefore that which we conceive by our direct universal concepts, must be real.

Proof of major: A logical judgment is one whose predicate is a direct universal (e.g. Peter is a man, Fido is a dog, the lily is a flower). Now unless that which is conceived in the predicate, were real, it could not be *identified* with a real subject; yet this is done in every logical judgment; for the copula 'is' expresses identity (see p. 24).

b. The direct universal is conceived so as to omit individuality; else it could not be predicated of many.

Now nothing can exist without some individuality.

Therefore the *manner* in which the direct universal is conceived, is not real.

Proof of major: Thus if I know what the word 'man' means, I conceive 'rational animal.' But this concept omits the individuality of the single men existing or possible; it says nothing e.g. about Peter's height, weight, age, parents etc.; nor does it say anything about Paul's height, weight etc. But these are the things precisely which constitute their individuality; by them we distinguish one man from another.

Cor. 1. Therefore the manner in which things are in the mind, differs from the manner in which things are in themselves. In themselves, all things, existing

or possible, have their own individuality; but the mind, when conceiving them, omits this entirely.

An objection might be raised against this solution. For if it were true, then our mind would not represent things as they are. But to represent things *otherwise* than they are, is to falsify them, to err (see p. 119).

We distinguish the major: *that which* we conceive, differs from what things are, *no;* the mind does not represent things *completely,* i.e. so as to omit nothing, *yes.* There is then difformity between mind and object; but this difformity is merely negative. Error lies in positive difformity (see p. 103, 224).

Therefore there is a vast gulf between our position and that of *Kant,* according to whom our mind always *adds* something of its own.

Cor. 2. Therefore we have the power of intellectual *abstraction,* i.e. the power of conceiving something without its individuality.

Schol. *Origin of Universal Ideas*

A further question, not without its interest, is how direct universal ideas come about, or in what *abstraction* consists. Now, as ideas themselves, so abstraction, too, may be considered objectively and subjectively. A few remarks on both aspects must suffice.

a. Considered *objectively,* abstraction may be explained in two ways. The intellect may conceive the universal without first knowing the individual as such, or it may first know the individual and then, by gradually eliminating all individuality, arrive at the universal concept.

Following St. Thomas, Scholastics more commonly explain the origin of primitive ideas by the former method. But some (e.g. Suarez) claim that all our

ideas are originally singular, and that universal ideas are arrived at only by formally comparing individuals (i.e. by noting their likeness and unlikeness).

b. This difference of opinion appears again when psychologists try to explain the various *acts* comprised in abstraction.[1]

Proof of Second Part

a. A figment of the mind is something which cannot exist except objectively in the mind (as object of the mind).

Now *that which* we conceive by the reflex universals, exists indeed objectively in the mind, but cannot exist otherwise.

Therefore the reflex universals are figments of the mind.

Proof of minor: That which we conceive by the reflex universals, is 'one *as* common to many' (see p. 14, 58). Now one as common to many cannot possibly exist outside of the act of cognition; for only what is individual, can exist by itself.

b. The reflex universals are based on reality, if reality offers us a *reason* why we conceive one as common to many.

Now reality offers us such a reason.

Therefore the reflex universals are based on reality.

Proof of minor: This objective reason is the *likeness* and *unlikeness* which actually exists between in-

[1]This uncertainty, however, does not react on our thesis. Even though we may be ignorant of the origin of a thing, we may be sure of many others of its attributes.

dividuals. Thus Peter and Paul are like each other inasmuch as both are rational animals; they are unlike each other as regards age, size, weight etc. Men and horses are like each other inasmuch as both are animals; they differ inasmuch as only men are rational.

Cor. 1. Therefore *predicables* have a foundation in reality, though in themselves they are figments of the human mind.

Cor. 2. Therefore the *Porphyrian Tree,* too, is a figment of the human mind. That it is based on reality, is shown in other parts of philosophy.

Cor. 3. Therefore we have the power of *systematizing,* that is, of constructing an orderly whole by coordinating and subordinating ideas (see p. 55).

Cor. 4. Therefore the ultimate goal of all knowledge, which is the *system,* is possible.

Thesis 11

There are immediate analytic principles, which have objective validity and are absolutely necessary.

1. Immediate Analytic Principles

a. A *principle* is a universal proposition, that is, a proposition whose subject (S) is a universal term used distributively; e.g. man is mortal (see p. 25).

> The reason why universal propositions are called principles, is because from them other truths may be derived by inference. But this point is not insisted on here (see p. 66).

b. Nowadays, principles are divided into analytic and synthetic.

An *analytic* principle is one in which the motive of assent are the abstract concepts themselves, so that a mere consideration of them is sufficient to furnish the evidence for their truth. Thus when considering the relation between the abstract concepts of 'whole' and 'part,' I see that the whole is bigger than its part. The motive of assent here is not experience, not because I have seen this relation verified in a number of instances; but the abstract notions themselves furnish me with the necessary evidence.

Synthetic principles are those in which experience is partly the motive of assent; e.g. iron sinks in water.

c. *Immediate* principles are those which need no demonstration to make their truth manifest to us. Like

the sun, they bear their light within themselves and need no illumination from without.

Mediate principles are those which require demonstration; e.g. many theorems in geometry.

An analytic principle may be immediate or mediate; synthetic principles are always mediate.

2. Objective Validity

Objectively valid are those principles to which things outside of our cognition correspond. Thus if the principle 'man is mortal' has objective validity, then all individual men are and must be mortal.

However, the same distinction applies here as to the direct universal. *That which* the proposition expresses, is indeed outside of our cognition, but not the *manner* in which it is expressed. To explain. Outside of our cognition, S and P are identical, and this is what the proposition asserts. But owing to its imperfection, our mind must first separate S and P, and then join them again by means of the copula. This is the peculiar imperfection of the *human* mind; neither God nor the angels go through such a process of cognition (see p. 122).

3. Necessity

Absolutely necessary are those principles to which things correspond under all circumstances, so that no exception is possible.—Other principles are only *hypothetically* necessary; e.g. iron necessarily sinks in water; but God may work a miracle and not allow it to sink.

Adversaries:

1. Modern *positivists* (Aug. Comte, Taine, John

Stuart Mill) deny that there are any analytic principles, or at least that their necessity is absolute.

2. *Kant* denies the objective validity of such principles.

Kant does not deny that we formulate, nay must formulate them; but according to him, they are mere *laws of thought* (i.e. we cannot think of things otherwise), but he denies that they are also *laws of being* (i.e. that things must be as the principles say). Thus Kant would say that we cannot judge otherwise than that the whole is and must be bigger than any of its parts, but that we cannot say if this is invariably so in reality.

Meaning of Thesis:

We do not speak of any analytic principles in particular, but merely show that there must be *some*. In other parts of philosophy, we shall show that certain principles are really analytic (and immediate); e.g. the principle of contradiction, of identity, of sufficient reason (see p. 133), of substance, of causality, of finality (see p. 124) etc.

However, in the argument we shall use the principle of contradiction: "Nothing can at the same time be and not be"; or "a thing cannot at the same time be and not be."

Proof of First Part

If there were no immediate analytic principles, there would be no formal certitude.

Now there is formal certitude.

Therefore there are immediate analytic principles.

Proof of major: To be formally certain, I must see that the thing is so and cannot be otherwise. But this is impossible unless the principle of contradiction holds, viz. that a thing cannot be and not be at the same time.

2. There are principles.

Now there could be no principles, unless there were immediate analytic principles.

Therefore there are immediate analytic principles.

Proof of major: If there were no principles, all our propositions would be singular; but they are not.—Modern scientists admit at least synthetic principles.

Proof of minor: a) If there were no analytic principles, all principles would be synthetic; but synthetic principles have no necessity except in so far as they are based on analytic principles (as will appear from the next thesis). b) If there were no immediate principles, all principles would require demonstration; but not all can be demonstrated; for demonstration itself supposes principles (see p. 66).

Obj. Principles derived from experience are not analytic. Now all principles are derived from experience; for nothing is in the intellect except what was in the senses. Therefore there are no analytic principles.

A. Dist. major: if experience is partly the motive of assent, *yes;* if experience is merely the occasion for formulating the principle, *no.*

Proof of Second Part

Unless the first principles were objectively valid, also the certitude based on them and the conclusions drawn from them would be null and void.

But this consequent is tantamount to skepticism.

Therefore also the antecedent.

Cor. Therefore our analytic principles are not merely laws of thought, but also laws of being. In fact, they are laws of thought *because* they are laws of being; for our mind, while imperfect, is *made to know reality* (being).

Proof of Third Part

Those principles which flow from the essences of things, are absolutely necessary (like the essences themselves).

Now immediate analytic principles flow from the essences of things.

Therefore they are absolutely necessary.

Proof of minor: Abstract notions express only what pertains to the essences of things; else they are not strictly universal. But immediate analytic principles are derived from abstract notions.

Schol. There are also first principles of *method;* e.g. every good method proceeds from what is known to what is unknown, from what is clear to what is obscure, from what is certain to what is not; "contra factum non valet argumentatio"; the imperfect is to be judged by the perfect, not viceversa; "entia non sunt multiplicanda sine ratione," i.e. one must not assume more or higher causes than are necessary for an adequate explanation etc.

IV. REASON

Thesis 12

Under certain conditions, not only deduction and induction, but also convergence of probabilities lead to formal certitude.

Generally speaking, reasoning or inference is the mental transition from the known to the unknown. That is, from propositions which we know to be true, we pass to another which we had not known to be true, but which we now see to be also true, viz. on account of its *connection* with the former (see p. 33, 42). Because most of our knowledge is acquired by reasoning, not by intuition, man is called a *rational,* not an intellectual animal.

There are three processes of reasoning or methods of passing from the known to the unkown (see p. 69-70).

1. Deduction

a. In deductive reasoning we pass from a universal proposition to a particular (or from a more universal proposition to one less universal, or also from a universal proposition to one equally universal). Thus knowing that man as such is mortal, we conclude that Peter is mortal or that Americans are mortal.

b. Deductive reasoning is used chiefly in geometry, philosophy, theology.

c. Deductive reasonings are either *categorical* or *hypothetical,* according as all propositions are categorical or the major is hypothetical (see p. 40, 49). The *formal* principle of the former is the principle of identity, of the latter the principle of sufficient reason.

2. Induction

a. In inductive reasoning we pass from particular propositions to a universal; as when, having observed various pieces of iron sinking in water, we thence conclude that it is of the *nature* of iron to sink in water, and that therefore *all* pieces of iron sink in water.

Induction is called *complete* when all particular instances have been observed; if not all have been observed and yet a universal conclusion is drawn, the induction is called *incomplete,* as in the example given.

We speak chiefly of incomplete induction.[1]

b. Induction is widely used in the natural sciences. By means of it, scientists aim to establish two things: a) the *laws* which govern this universe (physical laws in a wide sense); b) the natural *classes* (species, genera etc.) into which the objects of nature are divided (see p. 7).

c. The actual process of induction comprises three steps: a) the gathering of *facts* by means of observations or experiments or both; b) the formulation of a *hypothesis* (theory), i.e. of a provisional law or a pro-

[1] *Complete* induction is of little scientific value. First of all, it can rarely be had. Secondly, it does not lead per se to strictly universal propositions, the aim of all science. For it tells us merely that a thing is so, not that it *must* be so.

visional definition; c) the *testing* of this hypothesis.

Our proof will bring out the essential points of this testing.

3. Convergence of Probabilities

a. In this third process of reasoning, we pass from some particular propositions to another particular proposition. Thus if 10 different witnesses testify to a certain fact, we may, under certain conditions, infer that that fact really happened.

As understood here, *probability* is a sign (argument) which points to the truth of some proposition, though not unmistakably so. *Convergence* of probabilities means that several signs point to the truth of the same proposition.

b. This method of reasoning is mainly used in history and daily life, where there is question of particular facts to be established.

c. The actual method is similar to induction. First of all, the *facts* must be gathered diligently and without bias. Then a *hypothesis* is formulated, that is, some other fact is assumed provisionally, which would account for the facts unearthed. Lastly, the hypothesis must be *tested,* to see if it and it alone explains the known facts.

Our proof is concerned mainly with the essential points of this last step.[1]

[1] The best explanation of this method of reasoning is found in some articles in Revue néo-scolastique (1919-1920) and in L'Etude comparée des Religions (II p. 381-424). Both are by H. Pinard de la Boullaye, S.J. But the first to draw attention to this method was Card. Newman in his Grammar of Assent.

Conditions of Certitude:

The conditions under which the conclusions reached by these three processes are formally certain, vary with the process employed:

1. For *deductive* reasoning two conditions are required: a) the *premises* must be certain; b) the *form* must be correct, i.e. none of the rules laid down for the syllogism (categorical or hypothetical) must be violated.

2. For *inductive* reasoning only one condition is necessary, viz. the induction must be *perfect*. That is to say, it must be shown that neither external circumstances nor internal (logical) accidents can account for the facts observed. When this has been done, induction, even though incomplete, is called perfect; else it is imperfect.

3. To arrive at formal certitude from *converging probabilities,* two conditions are necessary: a) the single items must be *independent* of one another (e.g. there must be no collusion between witnesses); b) they must all point to the *same* fact.

Adversaries:

1. *Positivists* claim that the *categorical* syllogism is useless, because the major, being a universal proposition, already contains the conclusion, and could not be known to be true unless the conclusion, too, were known to be true.

2. Positivists also claim that *induction* never leads to formal certitude, but at most to a high degree of probability.

Proof of First Part

If, supposing the premises to be certain, a correct deductive syllogism could lead to a false conclusion, its formal principles could be false.

Now the formal principles of the deductive syllogism are absolutely certain.

Therefore, supposing the premises to be certain, a correct deductive syllogism cannot lead to a false conclusion.

Proof of major: A deductive syllogism is correct if the rules of the syllogism are observed. Now the rules of the syllogism are nothing else than an application of the formal principles of the syllogism: the principle of identity in categorical syllogisms, and the principle of sufficient reason for hypothetical syllogisms. Therefore if a correct syllogism could lead to a false conclusion, its formal principles could be false.

Proof of minor: Both the principle of identity and that of sufficient reason are analytic and immediately evident.

Obj. 1. The major, being a universal proposition, necessarily supposes the conclusion to be true and known as true. Therefore the deductive syllogism is ***useless.***

A. Dist. antec. to be true, *yes;* to be known as true, *subdist.* virtually, *yes;* formally, *no.*

Take an ordinary example: Man is mortal; Laban is a man; therefore Laban is mortal. Of course, if in reality Laban were not mortal, the major would not stand. Moreover, when I assert the major, I implicitly assert that Laban, too, is mortal; I also know this *virtually,* inasmuch as, with the aid of the minor, I can arrive at the conclusion. But I cannot know the conclusion *formally* without this aid; Laban might be the name of an archangel or of a constellation in the heavens or of a chemical element.

The same objection is sometimes urged differently. The deductive syllogism, it is said, teaches us nothing *new,* and is therefore *useless.*

There is some truth in this contention. The main purpose of the deductive syllogism is not to discover new planets or new ways of preparing breakfast, but to bring *order* and *system* into our knowledge. Now is not this also something new? Nay is it not far more important than a thousand patents secured from Washington? The Summa of St. Thomas is still hailed as the work of a genius. Not because it added to the sum of positive knowledge, but because it organized into a well-rounded whole the truths already known. The world today would acclaim as a genius the man who could change our encyclopedias into one grand Summa.

Obj. 2. History tells us that syllogisms have led to many errors, and that all heretics use syllogisms to bolster up their doctrines.

A. Dist. syllogisms in which the premises were certain and the form correct, *no;* other syllogisms, *transmit.*

Proof of Second Part

Supposing the premises to be certain, a correct deductive syllogism cannot lead to a false conclusion.

Therefore also a process which may be *reduced* to such a deductive syllogism.

Now induction may be reduced to a correct deductive syllogism whose premises are certain.

Therefore, under certain conditions, induction cannot lead to a false conclusion.

Proof of minor: This consists in indicating the deductive syllogism to which induction may be reduced, viz.

An attribute which is always present in an object, no matter how external circumstances and internal (logical) accidents vary, pertains to the *essence* (na-

ture) of that same object, and consequently *all* objects having that same essence must also have this attribute.

Now attribute A is always present in B, no matter how external circumstances and internal accidents may vary.

Therefore attribute A pertains to the essence of B, and all objects having the same essence as B, *must* have attribute A.

Concerning this last syllogism:

a. *Illustration:* Suppose that after several experiments, in which we have observed iron to sink in water, we surmise that this is a *law,* and that iron by its very nature *must* sink. How can we *test* this hypothesis? We must vary both the external circumstances of the experiments (time, place) and the internal accidents of iron and water (using round, square, oblong pieces of iron; using warm, cold, quiet, flowing water etc). If after and in spite of all these variations, iron continues to sink in water, we are entitled to ascribe the phenomenon to an essential relation between iron and water. (Compare how the laws of motion are proved to be laws in physics, or read the account of how the mosquito was proved to be the carrier of the yellow fever germ.)

b. *Proof of major:* The major is an analytic proposition and may be shown thus: a) There must be a *sufficient reason* why a certain attribute is always present in an object. Now, apart from external circumstances and internal accidents, there can be no other reason than the *essence* of the object. b) The essences of things are *unchangeable.* Therefore also the attributes which flow from them. Therefore all objects

having the same essence, *must* have the same attributes (properties).

c. *Proof of minor:* The minor must be proved, in each particular case, by means of *observations* and *experiments*. How many of these must be made, or how much external circumstances and internal accidents must be varied before the minor can be called certain, cannot be determined a priori; a good deal depends on the genius of the experimenter.

John Stuart Mill laid down 4 methods for ascertaining the cause of a natural event (System of Logic III 8). Others reduced them to 3 or 2. But useful as they may be for some particular studies, they are not wide enough for a general course. Cf. Honecker, Logik p. 184.

Cor. Therefore it is possible to establish *synthetic* principles (laws and definitions of natural objects).

Obj. 1. There is a rule of the syllogism which says: If either premise is particular, the conclusion, too, must be particular (see p. 45). Now the minor of the deductive syllogism to which induction is reduced, is *particular*. Therefore the conclusion cannot be universal.

A. Grant major. Dist. minor: is explicitly particular, *yes;* is not implicitly universal, *no.*

Obj. 2. Because a thing is so, we may not infer that it *must* be so (see p. 72). But induction does this.

A. Dist. major: we may not infer immediately, *yes;* mediately, *no.* We bring the facts observed under a principle, viz. what pertains to the *essence*, not only is so, but must be so. It is the very purpose of induction to prove that a certain attribute pertains to the essence of a thing.

Obj. 3. As a matter of history, most laws based on induction were afterwards proved to be no laws at all. Therefore induction is practically useless.

A. Dist. antec. based on perfect induction, *no;* on imperfect induction, *transmit.*

We are sure that all men must die. Why? Because we have

perfect induction for the basis of this law. But why must all men die? That is a further question which does not concern us here.

Obj. 4. Induction contains a *vicious circle;* for it supposes what it sets out to prove, viz. the existence of essences and natures.

A. No. Induction supposes that there are essences and natures. But it sets out to prove that such and such is the particular nature of this class of objects.

How, you ask, do we know that there are any essences *at all?* We answer: From the fact that things, though undergoing many changes, yet remain fundamentally the same. Also, if there were no essences, our universal concepts would have no objective validity.

Proof of Third Part

The deductive syllogism leads to formal certitude.

Therefore also the process which may be *reduced* to a deductive syllogism.

Now convergence of probabilities may be reduced to a deductive syllogism.

Therefore also convergence of probabilities leads to formal certitude.

Proof of minor: The proof here also consists in indicating the deductive syllogism to which convergence of probabilities may be reduced, viz.

There must be a reason why all independent signs point to the same fact (principle of sufficient reason).

Now there would be no reason for this, unless this fact were true. (This is to be proved, in each particular case, by eliminating all other reasons possible.)

Therefore this fact is true.

Illustration: Suppose that 5 contemporaneous historians testify that Nero committed suicide; suppose

moreover that these historians are independent of one another (hence no conspiracy or collusion), and that all other motives (e.g. greed, envy, hatred) are excluded—then the only sufficient reason for their unanimous testimony can be that Nero really did commit suicide.

Obj. A mere collection of *probabilities* cannot beget formal certitude. Now convergence of probabilities is a mere collection of probabilities. Therefore it cannot beget formal certitude.

A. Dist. major: unless a new motive is added, *yes;* even when a new motive is added, *no.* The new motive is the principle of sufficient reason: Why do all these probabilities *converge,* i.e. point to one fact as their only explanation?

Cor. Therefore also the *ideas* which are the logical result of any of these three processes of reasoning, have objective validity; e.g. the idea of God. Such ideas are called *factitious,* in opposition to primitive ideas.

V. HUMAN TESTIMONY

Thesis 13

Under certain conditions, human testimony concerning external facts which the witness himself has observed, begets formal certitude.

1. Testimony, Witness

Testimony is the statement of a witness.

The word '*witness*' has three meanings (cf. Standard Dict. s.v. testify). a) In a wide sense, it signifies one who *manifests* something to another; this definition would also include gossipers. b) In a strict sense, it means one who manifests to another something *as true* (e.g. on the witness stand). Such a witness *guarantees* the truth of his statement; he feels insulted if he is not believed; if he lies or even errs, he deserves censure. c) In an even stricter sense, a witness is one who is *officially* or *authoritatively* constituted to act as witness. Thus Our Lord constituted the Apostles to be witnesses to His doctrine and miracles. An attorney is formally authorized to witness to a deed.

2. Meaning of Thesis:

a. We only speak of *human* testimony, that is, statements by which a man manifests something to another. We do not now speak of divine testimony.

b. We only speak of *immediate* testimony, that is,

statements made by men who actually witnessed the events narrated (eye-witnesses, spectators). We do not speak of hearsay.

However, there is no essential difference between oral and written testimony, as long as we are sure *who* is the witness. Hence the thesis may easily be extended to statements made in letters etc.

c. We only speak of testimony which concerns *external* events, not testimony concerning internal facts or scientific conclusions (see p. 182, 183).

For clearness' sake, we also suppose the events to be public, extraordinary, easily perceived; such as a city on fire, a railroad accident, a football game etc.— Moreover, we limit the thesis to the *substantials* of the event, abstracting from minor details, causes, consequences etc.

Conditions of Certitude:

These differ according to the *number* of witnesses:

a. If there is only *one* witness (or only *a few),* I must be sure of his knowledge and veracity. Negatively, I must be able to exclude error and lying from the witness.

An intellectual assent given to the statement of a witness on account of his authority is generally called 'belief.' The *authority* proper to a witness consists in his *knowledge* and *veracity.* We believe a man when we are convinced that he knows the truth and that he is telling it.

b. Where there are *many* witnesses, we need not

inquire into the knowledge and veracity of the single witnesses. But we must make sure a) that they *agree* among themselves, that is, that they all testify to the same event, b) that there is *no collusion* among them to deceive.

Adversaries:

David Hume, John Locke, Harnack etc. deny that even immediate testimony begets certitude where there is question of a *miracle*. But this position of theirs is evidently due to prejudice; they will not admit miracles, and hence are ready to deny whatever would prove this prejudice unfounded.

Proof of Thesis

1. Where there is only *one* witness

Formal certitude is had from the testimony of a man who knows the truth, and tells what he knows.

Now sometimes we can be sure that a witness knows the truth and tells what he knows.

Therefore sometimes formal certitude is had from the testimony of one witness.

Proof of major: If the witness knows the truth, error on his part is excluded; his mind is conformed to reality. If he is truthful besides, lying is excluded; his speech is conformed to reality.

Proof of minor: a) To be sure of the witness' *knowledge,* I need only know that the witness was present at the event narrated, that his senses were normal and functioned normally. Now this can sometimes be known for certain, especially when (as we

suppose) the event is public, extraordinary, easily perceived. b) We are assured of the witness' *truthfulness,* if a lie would profit him nothing ("nemo gratis mendax"), if it could easily be detected, especially if the lie would harm him or his friends.

The case becomes, of course, stronger when the witness is *officially* appointed as such.

Obj. "Testis unus, testis nullus," as experts in law say.
A. Dist. as a rule, *yes;* never, *no.* As a rule, the testimony of one man begets at most *practical* certitude; for ordinarily we cannot exclude all possibility of error or lying on the part of the witness. But from the argument it is clear that this is not always so.

2. Where there are *many* witnesses

There must be a *sufficient reason* why many witnesses, though not in collusion, yet agree in making a certain statement. Which reason can only be a common error or a common lie or the truth. No other reason can be alleged.

Now when many witnesses agree, though not in collusion, there cannot be a common error or a common lie.

Therefore the only sufficient reason for their statement is the truth of the event narrated.

Proof of minor: a) It could not be a common *error;* for remember we suppose a fact that is public, extraordinary, easily perceived; if there were error, why do they all agree in their error? b) Nor could it be a common *lie;* for we suppose that there is no collusion among the witnesses; now without collusion, a common lie is impossible.

That there was no collusion among the witnesses, is often clear from the *personal touch* of their narrative.

Where there is no collusion, each will narrate the event in his own way, order, words. There will then be divergence in minor details, but agreement on substantials.

Objections

1. A rich source of error cannot well be called a source of certitude. Now there is no richer source of error than human testimony.

A. Dist. major: that which cannot be trusted even when certain conditions are fulfilled, *yes;* otherwise, *no.*

2. Human testimony is essentially untrustworthy. As experiments have shown, no two men will give the same account of the same event.

A. Dist. regarding the substantials of an event, *no;* regarding minor details, causes etc., *yes.*

3. A collection of probabilities cannot beget certitude. Now the joint testimony of many is merely a collection of probabilities.

A. Dist. major: unless a new motive is added, *yes;* even when a new motive is added, *no.* The new motive here is the *agreement* among *independent* witnesses; this fact, too, must have a sufficient reason (see p. 176).

4. At least we can never be certain where there is question of a *miracle.* For we must believe what is more credible; now it is *more* credible that the witnesses err or lie than that a miracle has happened.

A. Grant major. Dist. minor: under the conditions given in the thesis, *no;* under other conditions, *transmit.*

Scholia

1. Testimony Concerning *Internal* Facts

Can we ever be sure of the testimony by which somebody manifests to us his own *internal* facts; e.g. if someone complains of a headache?

We answer: Yes, provided we can be sure a) that

the person is in the *normal* state, b) that he can have no reason to *deceive* us in this matter.

The necessity of inserting the first proviso is evident from what was said about consciousness. Though consciousness correctly reports internal facts, yet we are apt to misinterpret them for one reason or another. Now such misinterpretation becomes habitual, as it were, in abnormal persons, so much so that they themselves may be totally unable to discern what is going on within them.

The second proviso can be tested by the same criteria as were applied above to the testimony of one witness.

2. *Scientific* Testimony

In the thesis we spoke of historic testimony, that is, the attestation of a fact or event. Scientific testimony is the manifestation, not of an event, but of a scientific or philosophic *conclusion;* as when scientists attest the existence of ether or of evolution.

Scientific testimony differs essentially from historic. Historic testimony easily leads to formal certitude; scientific testimony may beget probability (opinion), but *per se* it does not beget formal certitude.

History tells us that scientists have put forward many conclusions (theories) which were later abandoned. At one time, all astronomers taught the Ptolemaic system, which is now seen to be erroneous; in the 18th century, all chemists taught that burning was due to a special substance, called phlogiston, present in the combustible body. Reason also tells us that all men, no matter how learned, may err in their conclusions.

Hence with regard to scientific theories, two maxims must be kept in mind: a) *"Locus ab auctoritate est infirmissimus"* (S. Thomas). That is to say, in scientific (and philosophical) matters an appeal to authority is the weakest argument. b) *"Tantum valet auctoritas, quantum valent argumenta."* That is, on the same matters, the word of a man is no better than his arguments.

Still, *per accidens,* scientific testimony may beget formal certitude, viz. a) when the witnesses are many, b) when the matter is easy, c) when there is no reason to suspect prejudice etc.

3. *Divine* Testimony

When *God* speaks to us, He evidently deserves the fullest credence. For He possesses in the highest degree the two qualities which constitute the authority of a witness: knowledge and veracity. God knows all things and cannot possibly tell a lie.

This holds even if we do not fully grasp the *meaning* of God's revelation. Even in human affairs we accept a witness' word for facts of which we do not see how they could have happened; if we demanded to see the why of all the facts of history before believing them, there would be little to believe. Much more so in the case of divine testimony. His authority infinitely transcends that of any human witness.

4. Trustworthiness of *Historical* Accounts

In the thesis we spoke of contemporary events. There are, however, events which happened *long ago;* e.g. the American Revolution, the Migration of Nations, the

Peloponnesian Wars, Moses leading the Jews out of Egypt etc.

These events of long ago may come down to us either through oral tradition or through written accounts, called historical documents. Leaving out oral tradition, we ask: Can we ever be certain of the events which these documents narrate to us, and if so, under what conditions? Thus when reading Tacitus' history of Rome, what am I to think of the facts narrated therein?

First of all, there is no essential difference between oral and written testimonies, the attestation of contemporaneous events or of events long past (see p. 179). Hence essentially the *same* conditions apply to our question as were applied in the thesis.

However, there is an accidental difference of some importance.

When the testimony is oral, we can easily assure ourselves a) of the person of the witness and hence of his authority as a witness, b) of his exact statement, c) of its true meaning. But things are not so easy when there is question of ancient history.

Hence before inquiring into the knowledge and veracity of the writer, three other points must be determined: a) Who made this statement? b) Is this his exact statement? c) What is the true meaning of the statement? Or speaking of whole *books,* it is necessary to determine beforehand: a) that the book is *genuine* (authentic), b) that it is *entire,* i.e. neither mutilated

nor interpolated, c) that such is the *meaning* intended by its author.

Now in some cases, all these points may be determined for certain. The science of *historical criticism,* as it is called, has been worked out within the last centuries as a safe guide in all these questions.

Part 3

NATURE OF CERTITUDE

Having proved in general that formal certitude is not an impossibility, and having pointed out the various God-given means to arrive at it, we now enter on the more *philosophical* discussion of its ultimate motive (whence its definition) and of its divisions.

CHAPTER 1

Ultimate Motive of Formal Certitude

Thesis 14

Formal certitude is a firm assent (or dissent) based on motives which are in themselves infallible and are known to be infallible.

1. Formal Certitude

a. *Certitude* may be defined as a firm assent (or dissent), i.e. one which is unwavering and without fear of error. This definition sets off certitude from doubt as well as from opinion; for *doubt* is absence of assent (or dissent), and *opinion* is hesitating assent (or dissent). We doubt or opine precisely because we fear lest we be wrong.

b. *Formal* certitude may be defined as a firm assent (or dissent) which is necessarily true and known to be true, i.e. one in which the mind is necessarily conformed to its object and knows its own conformity. This definition sets off formal certitude from every other. For, though every certitude is firm and unhesitating, yet neither purely subjective nor practical nor respective certitude can be called *necessarily* true.

Our present purpose is to find the (logical) cause of this necessity. What makes formal certitude to be

necessarily true? Or in other words: a) Why and how is this necessity of truth *present* in formal certitude? b) Why and how is it *known* to be present?

In this thesis we shall point out what kind of cause formal certitude demands in *all* cases, in the next what it is in the *natural* order. The present thesis then is generic, the next specific.

2. Assent (or Dissent)

The term 'assent (or dissent)' primarily means a *judgment* (positive or negative).

But, as experience tells us, a judgment, especially when firm and oft-repeated, results in a corresponding state of the mind, which lasts until we forget all about it. Whatever the psychological explanation (cf. Fröbes, Psych. spec. I p. 241-250; II p. 222), the fact is of daily occurrence. Hence the term 'assent (or dissent)' also stands for the *habitual state* resulting from a firm judgment.

3. Infallible Motive

a. Whenever we judge, we do so for some *motive* or reason. To judge without any motive at all, would not only be silly; it is simply impossible. This is so a fortiori of firm assents. My motives not only urge me to judge so, but also to judge firmly and unwaveringly.

b. An *infallible* motive is one which excludes the very possibility of error.

Note the word 'possibility.' A guide is not called infallible merely because there is no special reason

for doubting his knowledge, or because it is highly improbable that he will lead us astray. We want to know *positively* that he *cannot* lead us astray; only then do we call him infallible. Similarly, we call a motive or reason for judging infallible only when it cannot lead us into error (see p. 120).

Proof of Thesis

Formal certitude is a firm assent (or dissent) which is necessarily true and known to be true.

Now a) no assent can be such unless the motive for it is in itself infallible and is known (by me) to be infallible; b) the assent must be such (normally) if the motive is infallible and known to be infallible.

Therefore formal certitude is a firm assent (or dissent) based on motives which are in themselves infallible and are known to be infallible.

Proof of minor:

a. Only that judgment is necessarily true which *cannot* err. Now only an infallible motive excludes the very possibility of error; every other motive, no matter how alluring or appealing, leaves the door open for error. Therefore only an infallible motive is a sufficient guarantee for the (logical) truth of a judgment.

Moreover, our mind is not influenced by the motive as it is in itself, but as it is *known* (to me). Thus if one were to doubt the absolute validity of the rules of the syllogism, his conclusion, if correct, would indeed be necessarily true, but he would have little or no confidence in it. Similarly, when the Pope teaches ex cathe-

dra, Catholics are formally certain, because they know the Pope to be infallible; a Protestant, who is not aware of the infallibility of the Pope, might possibly obtain certitude concerning the same doctrine on other grounds, but not because of the infallibility of the Pope.

b. If my motives for a judgment are infallible, then my mind is *necessarily* conformed to the object; and if I know moreover the motives to be infallible, then I *know* the conformity of my mind with the object.

Cor. 1. Therefore formal certitude is essentially made up of *three* elements: a) a firm assent (or dissent) of the mind, b) an infallible motive, c) knowledge of its infallibility.

The first element, viz. firmness, is the logical effect of the other two; for if my motive for a proposition is really infallible, and if at the same time I realize that it is infallible, the assent (or dissent) following must be firm and unhesitating.

Cor. 2. Now we also see why the *other* kinds of certitude fall short of the ideal: In none of them is the motive of assent infallible, nor is the possibility of error excluded.

Surely, there is nothing in prejudice or stubbornness (the usual reason for *purely subjective* certitude) that would exclude the very possibility of error; in fact, as we shall see, both are most prolific sources of error.— Nor is the possibility of error excluded by the mere fact that we cannot sift to the bottom all the details of

our lives; inability of control does not spell impossibility of error. The possibility of error may be remote in *practical* certitude; it is there all the same.—The child rightly takes the mother's word for granted; but this does not exclude the possibility of the mother being wrong; consequently *respective* certitude is not necessarily true, though it is sufficient under the circumstances.

Thesis 15

In the natural order, objective evidence is the ultimate and universal motive of certitude.

1. In the Natural Order

We only speak of that certitude for which our faculties are *naturally* sufficient, that is, without the special help of God's revelation and grace; as when we are convinced that the world exists, that $2 \times 2 = 4$, that the whole is bigger than any of its parts etc. There is also a supernatural certitude, as when we as Catholics believe that there are three Persons in God. For such certitude, the special gift of faith is required. Of this we do not speak (see p. 101).

2. Ultimate and Universal Motive

A motive is the reason for doing something. A motive of certitude, therefore, is the reason for giving a firm assent to a proposition. A motive of formal certitude, of which we here speak, is the reason for giving a firm assent to a proposition, but so that the proposition is necessarily true.

An *ultimate* motive is one beyond which no other can be assigned.—A *universal* motive is one which extends to all assents. Or it may be said to be that motive which is contained in all particular motives, and without which these would have no force.

.3. Objective Evidence

Objective evidence may be defined (or rather described) as *"the object manifest to the mind."* It may also be defined as the "necessity of the object manifest to the mind." But we shall explain the first definition now.

a. The word *'object'* here must be taken in the *widest* sense possible. It must not be restricted to material things, nor to things actually existing. It may mean anything which the human intellect, without God's special aid, may know. It may be something material or spiritual, God or a creature, in heaven or on earth; it may be something actually existing or something merely possible; it may even be a figment of the mind (like the Porphyrian Tree). Briefly, it means anything *knowable,* anything that can be thrown into the form of a proposition, any relation between S and P or between the parts of a hypothetical proposition.

For 'object' we may also substitute *'truth,'* i.e. ontological truth; for everything is ontologically true in the sense that it can be known (at least to some extent), and evidence refers to the object precisely in as far as it can be known.

b. The word *'manifest'* does not mean 'obvious,' 'easily grasped,' 'understood at once.' What is obvious, is of course, evident; but a proposition may be evident without being obvious; e.g. the Pythagorean theorem in geometry. It has often taken centuries of thought and labor to make some truths evident; e.g. that the earth is round.

On the other hand, "truth is not always in a well," as Edgar Allen Poe rightly remarked. Some facts, some principles, some conclusions are so obvious that only a fool will deny them. They may be dubbed 'truisms,' but that does not make them less obvious.

As used in our definition, the word 'manifest' means two things: a) a certain quality of the object, which we may compare to the *illumination* which makes a material thing visible to the eye; b) the act of the mind *seeing* or understanding the object (together with the consciousness of this act and its infallibility).[1]

c. *'To the mind'* is added in the definition in order to exclude the senses. Strictly speaking, only the mind judges, and the term 'objective evidence' refers primarily to judgments, that is, to the *copula,* which is the form of the judgment.

Adversaries:

1. At the time of St. Thomas, some Arabian philosophers thought that an *angel* determined the mind to assent or dissent.—Bacon ascribed the ultimate determination of the mind to *God.*

2. Thomas Reid, a Scotch philosopher, thought that the ultimate reason for assenting firmly did not come from the object, but from some *blind instinct* within us urging us to assent to some propositions and to dissent from others.

[1] This act of seeing or understanding is often called *'subjective* evidence.' An unfortunate term. Still, it is clear that objective evidence implies subjective evidence in this sense.

3. According to Kant, our assents and dissents are due, at least partially, to the *peculiar nature of our intellect.* We judge things to be so, not because they are so, but because of some 'subjective forms' with which we were born. All our judgments then are at least partial illusions, like the judgments due to bias or prejudice.

Meaning of Thesis:

a. This thesis is purely *theoretical* and philosophical. It does not tell us how and when an object does become manifest to the mind. These questions were answered in the second part.

b. The thesis cannot be *proved* a priori. That would mean assigning an ulterior reason for the ultimate reason—clearly a contradiction. The thesis can only be proved by clearly explaining the terms. After which their mutual relation must be self-evident.

The thesis may be brought home by taking a proposition with the *highest* kind of evidence, viz. a mathematical equation. Why are we sure that $2 \times 2 = 4$? Why do we all feel constrained to assent to it? Why cannot we dissent? Lastly, because the relation between S and P is so unmistakably manifest to us.

Proof of Thesis

The copula 'is' here may mean 'is as a matter of fact' or 'is by right.' We shall prove the thesis for both meanings.

1. *(As a matter of fact)*

That is as a matter of fact the ultimate and universal motive of certitude, on which men fall back ultimately *whenever* questioned as to the motive of their firm assent.

Now men always fall back ultimately on objective evidence.

Therefore objective evidence is the ultimate and universal motive of certitude.

The *major* is, concretely, the definition of ultimate and universal motive of certitude. Questioning a man brings out his grounds of assent. And if questioning is continued long enough, the ultimate grounds of assent will be brought to light.

Proof of minor: We are certain of what our consciousness or our senses tell us; we are certain of the truth of first principles; we are certain of truths that have been demonstrated to us; we are certain of facts which we did not witness ourselves, but which we hold on the strength of the testimony of others. (These heads contain all the various classes of certitude, as we saw).

Now, if asked why we are certain in any of these cases, our ultimate answer will invariably be: Because the thing is manifestly so and because I see it to be so. Which is precisely what we mean by objective evidence.

2. *(By right)*

That is by right the ultimate and universal motive of certitude, a) beyond which no other can or need be assigned, b) without which no other motive would have any force.

Now a) no other motive can or need be assigned beyond objective evidence, b) no other motive would have any force without it.

Therefore objective evidence is by right the ultimate and universal motive of certitude.

Proof of minor: a) Clearly, when I can honestly say: The thing is manifestly so (cannot be otherwise),

I can go back no further; nor need I, since there can then be no fear of error. b) The force of the particular motives consists precisely in this that each in its own sphere manifests to me that the thing is so.

Cor. Therefore, in the natural order, there is one supreme *rule* to guide us: We are only sure when a thing is evident to us. As long as a proposition is not evident, we ought not to give it an unhesitating assent.

Objections

1. We can have certitude even when the object is not manifest to us; e.g. in the *mysteries* of faith. Therefore objective evidence is not the universal motive of certitude.

A. Dist. ant. in the natural order, *no;* in the supernatural order, *transmit.*

2. Even children are sure that $2 \times 2 = 4$, although this is not manifest to them.

A. Either the child is not formally certain or it has what we call objective evidence. At first, indeed, children may merely repeat what the teacher told them (respective certitude); but gradually a light will dawn on them, and then the truth will become manifest to them.

3. We can become sure by believing *witnesses.* Now in such cases we have no objective evidence.

A. Grant major. Dist. min. intrinsic evidence, *yes;* extrinsic evidence, *no.*

Evidence is called *intrinsic* (internal) if the thing becomes manifest to us by merely considering the terms of the proposition (such as is had primarily in first principles). All other evidence is called *extrinsic.*—Sometimes, however, the evidence gained through the testimony of witnesses is called extrinsic, and all other evidence intrinsic. The terminology is not yet fixed.

4. Students of geometry are sure of the Pythagorean theorem. But that theorem is by no means evident.

A. Grant major. Dist. min. immediately evident, *yes;* mediately evident, *no.*

Evidence is immediate if the object becomes manifest to us without the aid of demonstration. It is mediate if the object becomes manifest only through demonstration.

> Look carefully at the definition of immediate evidence. Something is called immediately evident because it requires no strict proof, not because it is manifest as soon as we think of it or our attention is called to it.

5. The last reason why we assent firmly is because we see clearly that the thing is so and cannot be otherwise. But this is *subjective* evidence. Therefore subjective evidence is the ultimate motive.

A. Dist. major: the last subjective reason, *yes;* the last objective reason, *no.*

Ultimately our mind must be conformed to reality (not to itself), and the light which manifests reality to the mind, must also be objective (not my passions or prejudices). Now this is primarily meant by objective evidence. That it implies the act of seeing, is not thereby denied.

Scholia

1. False Opinions

1. *God's Authority*

A French bishop, Huet by name, despairing of man's natural powers for attaining to truth, thought we could only be sure of a proposition if it was guaranteed to us by God's infallible authority. With our natural powers, he thought, we could never get more than probability.

Refutation: Before we can believe God's word, we must know for certain a) that there is a God, b) that He knows all things, c) that He is all-truthful, d) that He has spoken to us. If we were not sure of these things *beforehand* and hence through our unaided faculties, how could we ever be sure of what God revealed

to us?—Besides, we are sure of many things of which God has revealed nothing; e.g. the multiplication table.

This does not deny, of course, that we are absolutely certain of whatever God has revealed to us, nor that we are sure of some things only because God has revealed them; e.g. that there are three Persons in God.

2. *Agreement of Mankind*

A French priest, de Lamennais by name, is known for his 'traditionalism.' According to him, we can only be sure of what all men agree upon—not precisely because all agree on it, but because this agreement is due to divine *revelation* vouchsafed to our first parents in paradise and handed on from generation to generation.

Refutation: Before we can take what all men agree upon, we must be sure a) that we ourselves exist, b) that other people exist and existed, c) that they all agreed and still agree on something etc. Besides, once upon a time all men were agreed that the earth was flat; what then?

3. *Demonstration*

Some philosophers would call nothing certain unless it be demonstrated.

Refutation: If everything had to be demonstrated, there would be no certitude at all. To see the truth of this statement, we need only reflect on what demonstration implies.

Demonstration is an argumentation in which the premises are certain and the form correct. Now if nothing is to be taken for granted except on demonstration, then each of the premises should be demonstrated by another argument, and the premises of this again

by other arguments, and so on indefinitely (see p. 67).

Again, this does not deny that some things can and must be demonstrated; e.g. the existence of God, geometrical theorems etc.

4. *Experience*

According to modern positivism, nothing is really certain unless it can be verified by experience, or unless it can be subjected to the "scientific method" (see p. 7).

Refutation: If this were so, no universal proposition (e.g. $2 \times 2 = 4$) would be certain; nor would we be certain about suprasensible objects (e.g. the existence of God).

Again, we admit that we can be sure of some things only through experience; e.g. that iron sinks in water.

2. Other Definitions of Objective Evidence

a. Some Scholastics, arguing chiefly against Kant, understood by objective evidence simply the *object* itself. They meant to insist that the object (as explained above) is the measure of the mind, that the object must determine the mind. They wished to counteract the theory that the influence of something subjective (blind instinct, Kant's categories) or of something outside the object (God, angel) makes me assent to a proposition as true.

If objective evidence be taken in this sense, our thesis is a mere corollary of the commonsense notion of *logical truth.*

b. Others insisted on the word *'evidence,'* meaning that the object must be *known* before I can rationally assent.

Also in this sense, our thesis is implied in the notion

of logical truth, though it brings out the difference between ontological and logical truth.

c. Many Scholastics define objective evidence as the *necessity* of the object manifest to the mind.

But this definition may be taken in three different ways. Some mean by it that we have no objective evidence unless our *mind* is necessitated, so that it cannot help assenting (or dissenting). Others put the necessity in the *object* itself. Others again understand by it that there is a necessary *connection* between the motive of assent and the truth of the assertion. This last meaning seems preferable today.

We shall return to this question in theses 17 and 18.

d. Ontologically speaking, objective evidence is the *union* of subject and object, the knower and the thing known. *"Cognitum est in cognoscente,"* ran the scholastic axiom. How the object gets into the subject and how it is in the subject, are special problems of psychology.

3. Demonstration

On p. 67, demonstration was defined as "a correct argument from *certain* (and *evident)* premises." The reason for this definition is now clear. If the premises are purely *natural* truths, they must be evident. Not so, if the premises are taken from *revelation.*

CHAPTER 2

Divisions of Formal Certitude

Formal certitude is not always the same. We are certain that $2 \times 2 = 4$; no one has ever explicitly denied it. We are certain that the world exists, that Rome exists. Yet if we look a little closer, we cannot fail to observe that there is some *difference* between these assents. The question now is how we had best divide certitude, and whether the divisions established are essential or accidental (see p. 61).

One division might be taken from the *5 sources* of certitude. The evidence of the senses is not exactly the same as the evidence of the principle of identity. Already Aristotle remarked that we must not look for the same kind of evidence or certitude in all things. Thus it would be foolish to demand mathematical evidence for every proposition before we call it certain; such an attitude would inevitably lead to skepticism.

However, we shall base our divisions rather on the various elements comprised in the definition of formal certitude. Formal certitude then is essentially made up of *three* elements: a) a firm assent (or dissent) of the mind, b) an infallible motive, c) knowledge of its infallibility (see p. 191). The question to be discussed now is whether these three elements are always the same, or whether perhaps there is a difference between various kinds of certitude. The following three theses give the answer.

Thesis 16

Direct certitude, too, is formal certitude, nor does it differ essentially from reflex certitude.

The difference between direct and reflex certitude concerns the *third* element mentioned above, viz. the knowledge of the infallibility of the motive. In reflex certitude we know *explicitly* and distinctly that our motive is infallible; in direct certitude we only know it *implicitly* and indistinctly.

To illustrate:

The ordinary Catholic, when reading in the Catechism that all men are born with original sin, at once concludes that he, too, was born with original sin. And he adheres firmly to this conclusion, hardly being aware that it is a conclusion. Another Catholic, who has studied logic and epistemology, may argue thus: All men are born with original sin, as the Catechism teaches; now I am a man; therefore I, too, was born with original sin. Examining then this syllogism in Darii, and finding that it violates no canon and that its premises are certain, he, too, adheres firmly to the conclusion.

Hence two questions:

a. Can we say that only the latter is formally certain? Or has the former, too, the layman in philosophy, formal certitude? Our thesis claims that the certitude of both is *formal.*

b. But even if both direct and reflex certitude are formal, there is yet a difference in the knowledge of the infallibility of the motive. In the latter, this is explicit, in the former, only implicit. Is this difference sufficient to call it *essential?* We answer in the negative.

> Although there are even some Scholastics (as Card. Mercier) who think that only reflex certitude can be called formal, yet our thesis is *certain,* as will appear from the arguments.

Proof of First Part

1. If direct certitude were not formal, there would be no formal certitude at all.

Now the conclusion is absurd.

Therefore also the antecedent.

Proof of major: Reflex certitude means a *second* judgment, by which the evidence for an antecedent judgment is known and asserted explicitly. Now if a second explicit judgment were necessary to make the first certain, a third would be necessary to make the second certain—and so we should never come to an end; in other words, we should have no certitude at all.

2. That firm assent is formal certitude, which a) rests on an infallible motive and b) on the knowledge of its infallibility.

Now direct certitude, too, is such an assent.

Therefore direct certitude, too, is formal.

Proof of minor: a) The motive of direct certitude, too, is the object manifested through one of the 5 sources. b) If asked why we assent firmly, we indi-

cate both the motive and its infallibility; now we should not do so unless we had been aware of both before assenting.

Obj. If this part of the thesis were true, even direct certitude would imply reflection, viz. on the motive.
A. Dist. implicit reflection, *yes;* explicit, *no* (see p. 124).

Cor. Therefore there are some truths of which we are *all* formally certain even before we explicitly investigate the 'evidence' for them. These are the *truths of common sense.* "There is a common stock of knowledge which all men and women use in the ordinary concerns of life, gained from the primitive and inevitable experiences which every human being must undergo. This common experience is found in language, and used in literature and conversation, and presupposed and added to in the conduct of art and commerce" (M. C. d'Arcy, in Dublin Review, Oct. 1927 p. 161). Any scientific or philosophical theory that contradicts any of these truths of common sense, is eo ipso false.

Proof of Second Part

If there were an essential difference between direct and reflex certitude, the effects, too, would be essentially different.

Now the effect of both is essentially the same.

Therefore there is no essential difference.

Proof of minor: As a matter of fact, if there is any difference, the advantage lies with direct certitude. No layman in philosophy (e.g. bricklayers, farmers) ever doubted about the existence of this material world; but

many philosophers did, misled while examining explicitly the arguments or motives for this conviction.

Cor. Therefore the division of certitude into direct and reflex is only *accidental.*

Obj. If this were so, the study of logic and epistemology would be a luxury, not a necessity.

A. Dist. for the greater part of mankind, *yes;* for all, *no.* We do not deny that explicit reflection often helps us in the acquisition of certitude, nor that it is necessary where the matter is complicated (e.g. in scientific and philosophical discussions). We merely deny that without it certitude cannot be formal.

Scholia

1. Natural Logic

This thesis gives us the clue as to the *origin* of logic. By nature we are all endowed with certain rules, according to which we must reason and do reason in obvious matters. This native ability is called *'natural'* logic. Reflex or *'scientific'* logic is merely an accurate formulation and a further development of this ability (see p. 7, 40).

But from the thesis it also follows that there is *no essential difference* between natural and scientific logic.

2. The Beginning of Philosophy

Of late, much has been written on this subject.

a. Some advocated *doubt* as the only logical attitude for the beginner in philosophy. Unless one doubts and calls in question every proposition ever held as true, how, they ask, does he know whether his assents and dissents are justified? But such an attitude is suicidal.

It is that of the universal skeptic, and as we saw, there is no hope for him.

b. Others (among them some Scholastics) advocated merely *methodical* doubt as a starting point: the tyro in philosophy is not to doubt really, but to proceed *as if* he doubted everything. If understood rightly, such an attitude may be tolerated; but there is grave danger of falling back into the first opinion.

c. Many Scholastics (e.g. Tongiorgi, Pesch, Frick) insist that three so-called *"primitive truths"* must be accepted from the start: the principle of contradiction, one's own existence, the native ability of the mind to attain truth.

In accordance with the present thesis we say:

Philosophy intends to *examine* all truths (of the natural order), not doubting either really or methodically, but focusing attention on the *motives* for them, in order to elevate direct certitude to reflex.

3. Legitimate Circle

This thesis also gives us the clue for the solution of a difficulty which is apt to be a stumbling-block for beginners.

Every science has its suppositions. To end somewhere, we must begin somewhere. Philosophy is no exception. Philosophy, too, supposes many things. A philosopher who would suppose nothing at all, would be stalled at the very beginning. In many things then philosophy cannot be a progress from nothing to something, but from direct to reflex certitude.

Nor is such a progress a vicious circle. For the

philosopher does not suppose what is to be proved. He merely considers explicitly the *evidence* for what he has rightly supposed all along. It is a circle, but a *legitimate* one.

4. Answering Objections

Because the layman has not examined and analyzed the various sources and motives of certitude, neither can he solve many *objections* brought against the truths of common sense. But since direct certitude, too, is formal, he may simply *disregard* them. In his case, ignorance is bliss. Thus why should all men worry about the objections which Kant advanced against many of these truths? The layman, if asked how he reconciles his conviction with these objections, has the right to answer: *I do not know.* Nor need he, on that account, become less firm in his assent.

5. The Index of Forbidden Books

Hence it is that the Catholic Church wisely *forbids* the reading of certain books. Most Catholics could not answer the objections brought in them against their religion, and might, on that account, become wavering in their faith. To obviate this danger, the Catholic Church issues the index of forbidden books.

Thesis 17

Metaphysical certitude alone is perfect; still, also physical and moral certitude are formal certitude, though essentially inferior.

This division concerns the *second* element of the definition of certitude, viz. the *infallibility* of the motive. Does this infallibility admit degrees or must it always be absolute, so that, as soon as an exception is possible at all, there can be no question of formal certitude?

We claim the former.

Explanation of Terms:

Metaphysical or absolute certitude is a firm assent based on an absolutely infallible motive; as when we hold the truths of mathematics.—*Physical* certitude is a firm assent based on a motive which is physically infallible, though God, by His miraculous interference, may make an exception; as when I judge that a stone unsupported in the air will fall to the ground.—*Moral* certitude is a firm assent based on a motive which is morally infallible, though an exception is possible through the utter perversity of man; as when I judge that a mother loves her child.

While these definitions are generally accepted, there is not the same unanimity as to what precisely is the *motive* meant in the definitions.

The ultimate motive of natural certitude is objective evidence, the object manifest to the mind.

Now some would place the difference between these three kinds of certitude wholly in the object, that is, in the relation between S and P. They would divide 'certainty' rather than 'certitude' (see p. 105). This may be done. But it seems preferable and more consonant with the purpose of modern epistemology to include in the motive also the *manifestation* of the object.

By motive then we do not mean the objective relation existing between S and P, but the *connection* between the reason for the assertion and the truth of the assertion. For instance, I may assert the same thing either a) because I have seen it with my own eyes, or b) because I have reasoned it out, or c) because I have the testimony of reliable witnesses for it.

The second and the third part of the thesis are only *probable.* Some Scholastics (e.g. Palmieri) hold that formal certitude is either absolutely infallible or none at all. In other words, they admit no *degrees* of formal certitude.

Proof of First Part

That certitude is perfect which excludes all possibility of error.

Now metaphysical certitude alone excludes all possibility of error.

Therefore metaphysical certitude alone is perfect.

Proof of minor: The minor is an exclusive proposition (see p. 28). Hence: a) That metaphysical certitude excludes all possibility of error, is clear from its definition. b) Physical and moral certitude do not exclude all possibility of error, as is also evident from their definitions.

Proof of Second Part

Formal certitude is an assent based on an infallible motive.

Now such an assent is also had in physical and moral certitude.

Therefore also physical and moral certitude are formal certitude.

Proof of minor: a) The motives for these two kinds of firm assents are physical and moral *laws;* now these laws, though not absolute, yet produce their effect *necessarily* and per se; exceptions are indeed possible, but only through God's extraordinary intervention or man's utter perversity. b) Now such a motive *suffices* for formal certitude. First, they are essentially superior to merely probable motives, which imply no necessity. Secondly, in practical life they are admitted to beget formal certitude; thus in a baseball game, everybody is sure that a fly ball will not remain hanging in the air; to call it merely probable, would be ridiculous.

Obj. 1. The motive of assent is either infallible or it is not. There is no third alternative. Now if it is infallible, the assent based on it is absolutely certain; if not, there is no certitude. Therefore either absolute certitude or none at all.

A. Dist. major: either absolutely or physically or morally infallible or not infallible, *yes;* either absolutely infallible or not infallible at all, *no.*

Obj. 2. A motive is infallible only if it *cannot* lead into error. Now a motive which is only physically or morally infallible, may lead one into error. Therefore such a motive is not infallible.

A. Dist. major: absolutely infallible, *yes;* physically or morally infallible, *subd.* if it cannot lead per se into error, *yes;* only if it can never lead into error, *no.*

Obj. 3. Formal certitude excludes the very *possibility* of the opposite. Now an assent based on a physical or moral motive does not exclude the possibility of the opposite. Therefore such an assent is not formal certitude.

A. Dist. major: metaphysical certitude, *yes;* physical or moral certitude, *subdist.* excludes the possibility of the opposite per se, *yes;* also per accidens, *no.*

Obj. 4. Formal certitude is incompatible with error. Now an assent based on a physical or a moral motive may be erroneous. Therefore such an assent is not formal certitude.

A. Apply the same distinction as to the preceding objection.

Obj. 5. The last example given in the proof of the minor shows that these two kinds of certitude do not differ essentially from *practical* certitude. But practical certitude is not formal.

A. Deny major. In the former, the motive of assent is a *law;* in the latter, there is no law to appeal to.

Proof of Third Part

That assent is essentially inferior to metaphysical certitude, whose motive is essentially inferior.

Now the motive of physical and moral certitude is essentially inferior to that of metaphysical certitude.

Therefore physical and moral certitude are essentially inferior to metaphysical certitude.

Proof of major: The motive differentiates the assent; as the motive, so—logically and rationally—the assent. Therefore an essential difference in the motive will mean an essential difference in the assent. Now a difference in the infallibility of the motive constitutes an essential difference in the motive itself. And if the difference is one of degree, there will be essentially different degrees of the motive.

Proof of minor: The motive of physical and moral certitude is not absolutely infallible, but only per se.

Cor. Therefore there are (probably) three essentially different *degrees* of formal certitude: the highest is metaphysical certitude; physical certitude is essentially lower; moral certitude is still lower.

Hence 'formal certitude' is not a universal; for it is not predicated univocally of the three kinds (see p. 156). Rather it is an *analogous* term, and its principal analogue is metaphysical certitude.

Thesis 18

Formal certitude may be necessary or free.

This division concerns the *first* element of the definition of formal certitude. Is our assent always such that we are *physically forced* to admit the truth of a proposition even against our will, or does our *will* sometimes aid the intellect in its firmness?

Explanation of Terms:

Necessary certitude is a firm assent based on a motive which makes all doubt impossible. It is called 'necessary,' because the evidence is such as to compel the intellect.—*Free* certitude is a firm assent based on a motive which excludes all *prudent*, but not all imprudent doubt. It is called 'free,' not because the intellect is a free faculty, but because the assent depends directly on the influence of the will. (However, if one prefers the name 'moral certitude,' let him use that; no use quarreling about names.)

Lest free certitude be misunderstood, two things ought to be explained:

a. An *imprudent* doubt (fear of error) is one which is possible, but devoid of solid foundation. Doubt which has a solid foundation, is called *prudent*.

b. The word *'free'* does not mean arbitrary or ill-founded. It does not mean that I see what I want to see, or that I see what is not there. In free certitude, the will does not add to the evidence; it does not give to the mind a heightened power of vision (as does the

microscope to the eye or grace in the act of faith). But by a sort of sympathetic action (as the psychologists say) the will a) *focuses* the mind's eye on the evidence present, b) *shuts out* factors (e.g. prejudices) which might prevent or distract the mind from letting the evidence produce its full effect.

Opponents are of two kinds:

a. Those who will admit nothing as certain unless it has *mathematical* evidence. *Spinoza,* who wanted to prove everything mathematically, belongs to this class of opponents. We grant that mathematical certitude is the highest kind of natural certitude, but we deny that it is the only kind. And in this sense the thesis is *certain.*

b. In the supernatural order, all Catholics hold that the act of faith is both certain and free. But in the *natural* order (see p. 193), some Scholastics (e.g. Frick) admit only necessary certitude.

This thesis shows that there is no opposition between the natural and the supernatural order.

Against this latter class of opponents, we hold the thesis to be *probable.*

Proof of Thesis

1. Necessary certitude is based on evidence which makes all doubt impossible; free certitude is based on evidence which does not make all imprudent doubt impossible.

Now sometimes the evidence for formal certitude is of the former kind, sometimes of the latter.

Therefore certitude is sometimes necessary, sometimes free.

Proof of minor: There are truths which all admit, even *against their will;* e.g. the multiplication table, the principle of contradiction, one's own existence, the existence of an outer world. There are other truths which are not admitted by those *ill-disposed* toward them (e.g. the existence of miracles, the immortality of the human soul, the necessity of worshipping God). Now if the former depended on our good will, they would not be admitted universally; and if the latter did not depend on our good will, they would not be denied by so many.

2. *Physical* certitude is formal certitude. (This is admitted by those Scholastics against whom we argue).

Now physical certitude is free (in the sense explained).

Therefore formal certitude is sometimes free.

Proof of minor: If physical certitude were necessary, error would sometimes be necessary. But this cannot be, since our mind is made for the truth.

3. The thesis may be confirmed by many passages from *St. Thomas.* Thus according to him, the peculiar excellence of the first principles consists in this that they *cannot* be denied, that everyone must see their truth ("quorum contrarium nullus credere potest, etsi ore proferat"). See St. Thomas, In I Poster. Anal., L. 5 and 19; In IV Metaph., L. 6).

Therefore St. Thomas supposes (at least implicitly) that there are other truths which, though also certain,

do not enjoy this peculiar excellence and compelling force. (Other pertinent passages are to be found in his Summa Theologica, I qu. 82, a. 1 and 2; qu. 85, a. 6; De Veritate, qu. 14, a. 1).

4. That this division of certitude is not unusual outside of scholastic circles, is clear from the Standard Dictionary, s.v. Demonstration: "Proof in the strict sense is complete, *irresistible* evidence. . . . Moral certainty is a conviction resting on such evidence as puts a matter beyond reasonable doubt, while not so irresistible as demonstration."

Cor. 1. Therefore *evidence* itself, the universal motive of formal certitude, must not be conceived as indivisible. As daylight is overpowering at noon, but gradually becomes less until there is complete darkness, so evidence, in as far as the manifestation of the object is denoted, has an infinite number of *degrees*.

Cor. 2. Therefore assent (or dissent) is not always the same as insight into the relation between S and P.

Objections

1. All truths have been doubted or denied. Therefore there is no necessary certitude.

A. Dist. ant. really, *no;* as far as assertion goes, *transmit.* First of all, the fact that someone says he doubts a proposition, is of itself no cogent proof that he *really* doubts it in his mind. He may lie or misunderstand his own assertion. Secondly, the universal skeptics, who claim to doubt all propositions, are led to their assertion not by immediate evidence, but by a process of *reasoning* which is easily shown to be faulty. Thirdly, even the universal skeptics do not really doubt *all* things; else their practical life would be altogether different from that of the rest of mankind.

To some extent, what is said here of skeptics, may be applied to idealists,[1] atheists, determinists etc.

2. If there were any necessary certitude, it would be had in *mathematics.* Now even mathematical propositions have been doubted: witness Einstein and the geometry of the 4-dimensional space.

A. The same as above.

3. Formal certitude excludes all *fear of error.* Now free certitude does not exclude all fear of error. Therefore free certitude is not formal.

A. Dist. major: all prudent fear, *yes;* even imprudent fear *subd.* necessary certitude, *yes;* free certitude, *no.*

4. The ultimate motive of certitude is objective evidence. Now in free certitude, the ultimate motive would be the influence of the *will.*

A. Dist. major: the ultimate motive, *yes;* the only efficient cause, *subd.* where the evidence is perfect, *yes;* where the evidence is imperfect, *no.*

The influence of the will pertains to the efficient cause of the assent; it is not a motive, understanding by that the formal extrinsic cause ('object') or the manifestation of the object.[2]

5. Objective evidence is either sufficient for a firm assent or it is insufficient. If sufficient, the intellect is compelled to assent; if insufficient, the intellect cannot be said to be formally certain. Therefore there is no room for free certitude.

A. There is a third possibility. Objective evidence may be sufficient for a firm assent, yet not so overpowering as to preclude the possibility of all doubt. In that case, the assent is not extorted.

---

[1] A good account of the various (illogical) steps by which Christian Science arrived at *idealism,* may be read in E. F. Dakin's book "Mrs. Eddy" (p. 99, popular ed. of 1930).

[2] Observe. That the will can *directly* influence the intellect and bring about an assent, even a firm assent, cannot be denied. This influence is apparent in case of *opinion* and *error.* For neither in opinion nor in error does the object force the intellect to assent; yet the intellect does assent, even firmly.

Schol. Mention should be made of a division of certitude which Card. Newman introduced in his 'Grammar of Assent.' He distinguishes between *notional* and *real* assent, according as *vivid emotions* are absent from the assent or accompany it. Notional assent is without emotional background, lackadaisical, such as is generally given to the highly abstract principles of philosophy. Real assent is due to powerful emotions roused by personal experience, profound meditation or divine inspiration, stirring oratory etc.; it creates heroes and saints, also fanatics, for whom one principle is the mainspring of all their actions. Cf. Fröbes, Exper. Psych. (3rd ed.) II p. 179.

No one can deny the difference between these two kinds of assent or its practical import. But the nature of certitude is not thereby affected; the division is *accidental,* not essential.

CHAPTER 3

Opinion and Probability

Certitude is not the only state of the mind. There are also ignorance, doubt, opinion (see p. 104). A few remarks about the last.

1. Opinion is *hesitating* assent or dissent. An opinion therefore differs essentially a) from doubt, in which we suspend judgment, b) from certitude, which is a firm, unhesitating assent.

The reason why we sometimes judge hesitatingly, is because on the one hand we have a good, solid motive, while on the other we realize that the evidence is not sufficient for a firm assent. The motive of such an assent is often called its 'probability,' and an opinion is also called a 'probable judgment.'

An opinion is called *prudent,* if it rests on a really solid motive, i.e. one which is sufficient for a serious-minded normal person. If the assent rests on a very feeble motive, it is called *imprudent.*

2. Probability is called *intrinsic* or *extrinsic,* according as the motive of assent is taken from the object itself or from external testimony. Thus it is intrinsically probable that a sturdy youth will live for a number of years; but for the layman the atomic theory is only extrinsically probable; he assents to it only on the testimony of scientists (see p. 183).

3. Probability admits *degrees;* for one motive may be better and more solid than another. Thus if 10

scientists testify to the truth of the atomic theory, the layman has a stronger motive for assenting than if only one scientist proposed it.

Hence:

a. One opinion may be *more probable* than another, viz. when better arguments are had for the one than for its opposite.

b. An opinion is said to be *highly probable,* if there are excellent reasons for it, hardly any against it.

c. An opinion is *most probable,* if there are excellent reasons for it, hardly any for contrary opinions on the same matter.

d. An opinion is *the only probable one,* if there are solid (though not infallible) reasons for it and if all other opinions concerning the same matter are certainly wrong or devoid of any solid foundation.

Part 4

TRUTH AND ERROR

CHAPTER 1

Definitions

1. True Definitions

a. Truth, taken in the abstract, means a relation. Logical truth means the relation of conformity between the mind and the object, so, however, that the object is the pattern and measure, and that the mind must be conformed to the object—not vice versa. Hence *logical* truth is defined as *conformity of the mind to the object* (see p. 103).

However, the word 'truth' may also be taken concretely, and then signifies a proposition or *judgment* which is in conformity with reality. As St. Thomas says, we call a proposition true when "it affirms what is and denies what is not" ("affirmat esse quod est, et negat esse quod non est"). It is in this sense that we speak, for instance, of the truths of the Christian religion.

b. As truth consists in conformity, so error, its opposite, consists in *difformity* of the mind to its object. As St. Thomas, speaking concretely, says: We err when we affirm what is not, or deny what is.

However, to avoid difficulties, the word 'difformity' must be modified by an adjective.

Our judgments never express the whole reality. Thus when I say: This is a chair, I omit many things which are also in the existing object; e.g. its shape, color, weight. My mind therefore cannot be said to be conformed to the whole object, and in so far there is a certain difformity. Yet no one doubts that the proposition: This is a chair, is true. For this reason, error is defined more accurately as *positive* difformity between mind and object. Error does not consist in omitting certain aspects of the object, but only in misrepresenting that aspect of which I judge. (Compare what was said about universal concepts on p. 160).

2. False Definitions

a. According to Kant, truth does not consist in conformity of mind with object, but of the mind with its own idea.

But if this were so, there would be no error; to err, the mind would have to disagree with its own idea—clearly an impossibility.—Nor would there be any difference between the judgments of a normal individual and the ravings of a maniac.—Lastly, this definition evidently goes against common usage, which calls true that which agrees with reality (see p. 63).

Card. Mercier, of course, rejects this definition. But in order to have a common platform for his dispute with Kant, he accepts it as a *beginning*. He wants then to arrive at the common notion of truth. This methodical procedure is not to be recommended.

b. Others (Ockam, Lotze) would understand by truth not strict conformity, but some sort of *likeness*.

But if this were so, all our judgments would be es-

sentially false; for we use the copula 'to be,' which signifies identity, not mere likeness. When I say that Peter is a man, I mean something else than when I say that Peter is like John.

Akin to this definition is that which calls truth an *approximation* to reality. It is refuted by the same argument.

c. According to *pragmatists* (W. James), truth does not consist in conformity between the mind and the object judged about, but between the mind and human life. True is what *succeeds;* false is what does not succeed.

But apart from the fact that this definition implies relativism (see p. 112), pragmatists evidently confound the ordinary (not invariable) effect of truth with truth itself.

d. Owing to the fluctuations of modern scientific theories, truth is often said to be merely the best way of conceiving things as far as our *present knowledge* goes; this implies, of course, that tomorrow another conception may be found to be more serviceable and therefore true.

Also this definition opens the gates wide for relativism.

CHAPTER 2

Possession of Truth

Thesis 19

Truth and error are had fully in the judgment alone.

In logic we distinguished *three* acts of the mind: simple apprehension, judgment and reasoning. Simple apprehension is that act of the mind by which we merely perceive the object, but affirm or deny nothing about it (see p. 12). Judgment is that act of the mind by which we affirm or deny something of an object (see p. 22). Reasoning is the process of arriving at the unknown through what is already known (see p. 33).

The question for discussion now is this: In which of these three acts of the mind do we possess truth fully or commit ourselves fully to an error?

The word *'fully'* calls for two further remarks:

a. To possess truth fully, is to possess it as much as our human nature allows and desires.

As we saw above, truth may be possessed by us in two ways: hesitatingly and unhesitatingly. Possessing truth unhesitatingly is called certitude. Human nature can attain to this degree and is not fully satisfied with anything less. Our question then may be proposed

thus: To which acts of the mind can we ascribe *certitude?*

b. *Error,* too, may be hesitating and unhesitating. In complete error, our mind not only disagrees with reality, but we have even persuaded ourselves that our mind is in agreement with reality. The first degree is bad enough; but the second is far worse; for there is no more hope after that.

Proof of Thesis

1. Truth and error are fully had in those acts which everybody calls true or false in the strict sense of the word.

Now judgments alone are called true or false in the strict sense of the word.

Therefore truth and error are had fully in judgments alone.

Proof of minor: The minor is an exclusive proposition. Hence: a) That judgments are called true or false, is too well known to need proof. b) That neither simple apprehension (idea) nor reasoning are properly called true or false, is also evident. In simple apprehension we merely form a concept, without affirming or denying anything; reasoning as such, being merely a transition or process, may be called correct or faulty, but not true or false.

2. a. Truth is had fully when the mind has grasped reality as much as it can and desires.

Now this happens only in judgments.

Therefore truth is had fully in judgments alone.

Proof of minor: a) In the judgment, the mind is

not only conformed to reality, but also knows its own conformity; now the mind can neither have nor desire anything more than this. b) In simple apprehension (idea), though there may be conformity with reality, yet the mind does not know it. Reasoning is merely a method of arriving at conformity.

Cor. Therefore certitude is had in judgments alone.

b. Error, in the full sense of the word, consists not only in difformity with reality, but in the firm persuasion of having grasped reality.

Now this can happen in judgments only.

Therefore error is had fully in judgments only.

Objections

1. God possesses all truth fully. But God does not judge; for judging implies an imperfection.

A. We only speak of the acts of the human mind.

2. If the thesis were true, every judgment would be *reflex;* for to know its own conformity with the object, the mind must reflect on itself. Now there are also direct judgments.

A. Dist. major: either implicitly or explicitly reflex, *yes;* explicitly, *no* (see p. 124).

3. Truth is had fully wherever its *definition* is verified. Now the definition of truth is verified also in the idea.

A. Dist. major: 'fully' in the sense explained, *yes;* in any other sense, *no.*

4. Truth is had more fully in an act which cannot err, than in an act which can err. Now simple apprehensions cannot err, judgments can.

A. Dist. major: more 'fully' in the sense explained, *no;* in some other sense, *transmit.*

CHAPTER 3

Criterion of Truth

1. Criterion of truth may be defined as that (sign, mark) by which I know that I possess the truth, and that I consequently have the right to assent (or dissent) unhesitatingly.

No doubt, subjectively speaking, there are as many criteria of truth as there are sources of cognition. But Scholastics consider the question more objectively. Is there anything in the *object* that tells me that I have the truth?

2. Scholastics are not agreed whether we ought to look for a *universal* criterion. Some (e.g. Remer, Gény, de Maria) deny that there is any need for it; others insist that there is and must be one.

The quarrel would seem to be one of *definitions*.

Those who deny the need of a universal criterion of truth, point to the ordinary implication of the word 'criterion.' A criterion, they say, is needed only where there is danger of erring; now many propositions are so obvious that all danger of erring in their respect is excluded; therefore there is no need of a universal criterion of truth. As is clear from this argument, the *negative* aspect of criterion, viz. exclusion of the danger of error, is stressed.

Those who advocate a universal criterion of truth, rather stress its *positive* implication. Their argument

may be formulated thus: Criterion of truth is that by which we know that we possess the truth; now *whenever* we are sure, there must be that by which we know this; therefore there must be a universal criterion of truth.

What then, in this view, is the universal criterion of truth? Nothing else than *objective evidence,* the object manifest to the mind. When the object is manifest to my mind, I also know that I possess the truth; nothing else could give me this assurance.

This second view is more common today. But the whole controversy is of little importance.

3. *Descartes,* a French philosopher of the 17th century, proposed *clear and distinct ideas* as the ultimate and universal test of truth. But this opinion, manifestly born of the love of the French for clearness, is false. I may have a very clear conception of the sun moving around the earth; but that does not make it true. Clearness is not synonymous with truth.

There is no denying, however, that clear and distinct ideas are a necessary *condition* of certitude. One of the most common sources of error are confused and obscure ideas, that is, ideas which have no sharp-edged definition in our mind or which have not been analyzed into their conceptual elements.

CHAPTER 4

Degrees of Truth and Error

Can one judgment be called *more true* or *more false* than another?

a. Likeness between two things may be greater or less. Not so conformity, which constitutes truth. Conformity between the mind and object is either perfect or none at all. When I say that $2 \times 2 = 4$, this is either entirely true or not at all. Truth does *not* admit of degrees.

Sometimes indeed we speak of propositions which are *more or less true*. But then we mean that they have a true and a false meaning, that they therefore must be *distinguished*. But once the meaning has been made definite, the proposition is either entirely true or entirely false.

Still, this does not deny that we may *learn more* about an object and thus add to our knowledge of it (e.g. this is a table, this is a round table, this table is wooden).—Nor does it deny that one truth (concretely) may be *more necessary* than another.

b. Error admits of degrees.

First of all, one error may be wider of the mark than another; thus one who thinks that $2 \times 2 = 10$, is evidently farther from the truth than one who thinks that $2 \times 2 = 5$.—Moreover, error may cover a wider or less wide range.—Finally, error may only concern

accidental truths or even necessary truths; in this second case, the error is evidently greater and more deplorable (e.g. if one does not know that there is a God).

Error may be explicit or implicit, obvious or hidden. Thus to say: Christ is not God, is an obvious error. But modernists say that Christ is God, and mean something altogether different from 'God.' Such hazy concepts lead to the fallacy of equivocation (see p. 71).

CHAPTER 5

Causes of Error

Error is a false judgment. Error is an assent to what is not so, or a dissent from what is so; we say yes when we should say no—or vice versa.

The world is full of errors. Cicero says: "Cuiusvis est hominis errare"; and Catullus: "Suus cuique attributus est error." We, too, err almost every day. Skeptics conclude from this that there is no formal certitude at all. But we saw (thesis 1) how foolish this conclusion is. We also showed that nature has given us various means of arriving at formal certitude, and that formal certitude is possible in all fields of human endeavor.

Still, error is a *fact*—to be deplored, yes, but not to be denied. How can we *avoid error?* This is the last practical question of epistemology.

The best way to answer this question will be to find the *causes* of error. "Principiis obsta," as the Latin poet said. Once we know the sources of our errors, it will be easier to avoid them.

We shall divide the causes of error into proximate, remote, and ultimate.

However, before entering on this investigation, we must define error more accurately.

a. By 'errors' we mean those false judgments which people make in their *normal* state. In the abnormal

state (insanity, sleep, infancy) man's power of reflection is hampered in its free exercise; hence nobody accuses such people of *formal error.*

b. By 'error' we understand a *firm,* unhesitating assent (or dissent).

Therefore we do not speak of mere opinions, i.e. as long as a man's assent does not exceed the weight of his arguments. For, as long as a man is conscious of the insufficient evidence behind an opinion and does not assert more than the motives warrant, we do not speak of error in the proper sense.

In other words, by 'error' we mean *purely* subjective certitude.

I. PROXIMATE CAUSES

1. Error, being a judgment, must be due, at least partly, to the *intellect;* for the judgment is an act of the intellect.

But the intellect alone does not give us a sufficient explanation of error. Why should the intellect firmly embrace error? The intellect is made for the truth; of itself it cannot love error. — Nor is the intellect indifferent toward truth and error, so that it would embrace either with equal love. If that were so, the intellect would no longer be a faculty.—Nor can objective evidence ever force the intellect to adhere firmly to a false proposition. Objective evidence is the object itself manifest. Now the object cannot manifest itself other than it is.

There is then another cause of error besides the intellect. This other cause, in every case, must be the

will. There is no other factor which could directly influence the intellect and move it to assent without sufficient evidence of its own. As a matter of fact, if we reflect on the genesis of our errors, we realize that some non-intellectual influence has been active.

Hence we simply say that errors are *always* due to the direct influence of the will.

2. But let us not forget that both intellect *and* will co-operate in the making of mistakes, though in different manners. It is now our purpose to investigate the peculiar conditions which are apt to lead to erroneous judgments. These conditions are the remote causes of error.

II. REMOTE CAUSES

Error is impossible unless it has the *appearance* of being both true and good.

We cannot assent to a proposition that has not even the appearance of *truth.* For, on the one hand, truth, as Scholastics put it, is the formal object of the intellect; on the other, merely apparent truth is sufficient for the intellect to assent, as experience testifies.— Similarly, the formal object of the will is the good; the will cannot act unless its object be good, at least apparently *good.*

Now only the true is good and only the good is true. Error therefore is false and bad. But the question is: What gives to error the *appearance* of being true and good? This evidently is the remote cause of error.

1. Apparent Truth

Generally speaking, apparent truth is due to *confu-*

sion of ideas. This is clear from the very notion of judgment. The judgment is an act by which we affirm that S is or is not P. Now when the meanings of both S and P are clear, there is no possibility of saying 'is' when we should say 'is not'—or vice versa.

The further question then is: *Whence* are confused ideas? Though their origin is manifold, yet we may point out 4 of the principal sources:

1. Lack of Attention

All our (natural) cognitions come to us through one or more of the 5 sources spoken of in part two. Now in each source were pointed out the *conditions* necessary for formal certitude. But how many there are who ignore them and then assent firmly.

Under this head may also be brought *bad methods* of teaching and studying.

2. False Authority

What is the worth of authority with regard to facts as well as theories, we saw above (see p. 178, 183). Authority clothed with the necessary *conditions* is true authority. False authority makes the same claims, although it lacks these conditions.

Let us enumerate a few cases where false authority is often assumed and easily granted.

a. According to Cicero, the Pythagoreans, when pressed for a reason of their philosophical assertions, simply replied: "Ipse dixit" (he said so); that is, Pythagoras, their teacher, said so. That was enough for them. Now the Pythagoreans claimed to be philosophers, and as such it was their duty to investigate

for themselves. *Authority* is not the last criterion of truth or motive of certitude (see p. 229).

Nowadays many philosophers swear by Kant or Hegel; the Lutherans swear by Luther, the Christian Scientists by Mrs. Eddy. It is the same *intellectual idolatry.*

b. What an undisputed sway *public opinion* holds over men's minds! How insignificant the number of those who, having settled principles and sufficient strength of character, can go their own way both in thought and practice! The vast majority prefer to err with the mob than work out their own convictions. It is much easier.

Yet who, as a rule, creates public opinion? Are they experts in the matter? Did they first make sure of the truth and righteousness of their premises before drawing their conclusions? As a matter of fact, they generally are the leaders of political factions, men with an ax to grind, editors of newspapers whose one aim is the increase of circulation, men of wealth who care naught about principles as long as the dollars keep rolling in.

c. Today the *teacher's authority* is not rated very high. Yet, on account of the natural instinct to look up to the teacher as a guide, most pupils will unhesitatingly follow his lead. This is but right. But the teacher must not forget that his authority can never extend beyond the realm of truth. The mind of each pupil is made for truth, and he has the right to demand truth from his teacher, nothing but the truth.

Yet how many teachers there are in our universities,

who, either openly or in a more underhand manner, instil into their pupils the poison of atheism or materialism, who ridicule the Catholic religion or all religion, who propose doubtful theories as gospel truths. Of course, it is to be expected that pupils trained by such unscrupulous teachers become themselves even more unscrupulous teachers. Lies do not improve in the telling.

d. What has here been said about false authority, applies equally or even with greater force to *books, magazines, newspapers* etc. Error does not become truth by being put in print.

3. Prejudices

A prejudice is a judgment accepted without due examination. It differs from an honest opinion. A prejudice is always more or less *irrational,* precisely because it is held without being first subjected to critical inspection. Opinions may be held rationally, viz. as long as we do not forget that the evidence for them is not sufficient to warrant a firm assent. Prejudices, on the contrary, are a case of *mental astigmatism;* they will not allow us to see things as they are.

To draw up a catalog of prejudices, is impossible. They vary from age to age, from nation to nation, almost from man to man. There are prejudices in sciences and philosophy, in politics and social life. Let us enumerate a few which are rather common today: Man is naturally good; all religions are equally good; it is sufficient for any man to lead a good life; man

is descended from apes or ape-like beasts; miracles are humbug etc.

There are two things to be noted about prejudices:

a. We easily grant that *other people*, especially our enemies, are imbued with them and influenced by them in their judgments as well as actions. But it is exceedingly hard to admit that we, too, have our prejudices. Or if we admit it in general and in the abstract, nobody is allowed to touch any particular prejudice of ours; nothing fans our ire to such a red heat.

b. We try to *hide* our prejudices from others and from ourselves. We hate to see them discussed openly, to have them dragged out into daylight, so that everybody can have a look at them. Unconsciously or subconsciously we are ashamed of them as of a skeleton in our closet, because we half realize their irrational nature.

2. Apparent Good

Error appears attractive to us either because we love that which the proposition enunciates, or because we love the act of assent itself.

1. Self-love

Self-love may be said to be at the root of the first class of errors. We are naturally attracted toward those propositions which *flatter* us or our friends; we reject a priori those which seem to belittle us or ours. We readily believe what *agrees* with our opinions and prejudices; we stoutly deny what goes counter to them. The mere fact that a proposition agrees with our

customs and desires, gives it more evidence, as St. Thomas shrewdly remarked.

If self-love were to be made the standard of truth, the patrons of relativism would be right; each could call true what he likes to be true, and truth would vary from person to person.

2. Intellectual Laziness

Certitude is the ideal state of the mind; it denotes rest and quiet—legitimate rest and quiet. The other states of the mind imply fear of error, hesitation, suspense. They are irksome, and hence our passions urge us to get rid of them somehow.

Now in many things, certitude is to be had only at the cost of serious effort and *untiring* labor. This, of course, is asking too much of the indolent student. He finds it easier to repeat what others, especially his professors, have said than to probe the matter for himself. In after life, such students will blindly follow the opinions voiced in their club or among their friends; they will be satisfied with political slogans; their guide to truth and ultimate criterion will be the newspaper. Let George do the thinking, is their motto.

Concerning *slogans,* the handy tools of intellectual laziness, C. Ganss, of Princeton University, has well said: "Man's indolent habits grant such phrases long life. You do not need to pursue a tantalizing line of thought farther after you have found one. Once such a phrase has clicked into the receptive mind, it is hard to dislodge it. An aphorism may be untrue, but it is always labor-saving. It economizes effort, for it is

difficult with legitimate arguments to convince a persistent, hard-headed opponent, while it is easy, especially in the presence of a crowd, to knock him down with a slogan."

3. Vanity

Some people consider it a disgrace to own that in their case, too, knowledge makes a bloody entrance. They would rather scintillate than be solid. Hence *snap judgments* uttered to cover one's ignorance.

Intellectual vanity is especially apparent today in the craving for *encyclopedic knowledge.* It is easily acquired, and one can make a show with it. It certainly is easier to acquire than philosophy, which is not satisfied unless it has struck the rock bottom of ultimate causes and ordered all knowledge into one world-embracing system.

III. ULTIMATE CAUSES

The last reasons why we err, are two. There is first of all the imperfection of some things. As such Scholastics put down, e.g. matter, which contains a good deal of potentiality. But the chief reason of our errors is the imperfection of human nature: the dulness of our intellect and the preponderance of human passions.

Hence we may draw a general conclusion as to the *remedies* of error. We cannot change the imperfection of things; we cannot alter the nature of our intellect. But since every error is due to some inordinate passion, the final advice can only be:

A pure love of truth.

Bibliography

Balmes, James.—Fundamental Philosophy. Sadlier, N. Y. 1858

Balmes, James.—Criterion. P. O'Shea, N. Y. 1875

Barron, J. T.—Elements of Epistemology. Macmillan, N. Y. 1931

Coffey, P.—Epistemology (2 vols.). Longmans, London 1917

Coppens, Charles, S.J.—Logic and Mental Philosophy. The Catholic Publication Society, N. Y. 1892

Driscoll, J. T.—Pragmatism. Longmans, N. Y.

Fröbes, Joseph, S.J.—Psychologia speculativa (2 vols.). Herder, St. Louis 1927

Lord, Daniel A., S.J.—Armchair Philosophy. The America Press, N. Y.

Mahoney, Michael J., S.J.—Epistemology I. The Universal Knowledge Foundation, N. Y.

Mahoney, Michael J., S.J.—Cartesianism. The Fordham University Press, N. Y.

Poland, William, S.J.—Truth of Thought. N. Y.

Rickaby, John, S.J.—First Principles of Thought. Longmans, London 1888

Rother, Aloysius, S.J.—Certitude. Herder, St. Louis.

Ryan, James H.—An Introduction to Philosophy. Macmillan, N. Y. 1928

Shallo, Michael W., S.J.—Scholastic Philosophy. P. Reilly, Philadelphia 1915

Walker, Leslie J., S.J.—Theories of Knowledge. Longmans, London 1911

Index of Theses

1. Existence of Certitude

Page

1. Universal skepticism is theoretically absurd and practically impossible. 107
2. Relativism is absurd and leads to skepticism. 112

2. Sources of Certitude

3. All our cognitive faculties are per se infallible. 119
4. Immediate judgments of consciousness are absolutely infallible. 128
5. The world of bodies which we perceive with our senses, is real and knowable. 132
6. Under normal conditions, our external senses are infallible with regard to the proper and common sensibles. 138
7. The proper sensibles, especially colors and sounds, exist formally outside of our perception. 143
8. Not only is idealism absurd, but our ideas are per se objectively valid. 148
9. Universals are neither mere words nor mere figments of the mind, nor yet do they exist as such outside of our mind. 153
10. That which we conceive by the direct universal concept, is real, though not in the manner

in which we conceive it. The reflex universal concepts, however, are figments of the mind, though they, too, are based on reality. 158

11. There are immediate analytic principles, which have objective validity and are absolutely necessary. 163

12. Under certain conditions, not only deduction and induction, but also convergence of probabilities lead to formal certitude. 168

13. Under certain conditions, human testimony concerning external facts which the witness himself has observed, begets formal certitude. 178

3. Nature of Certitude

14. Formal certitude is a firm assent (or dissent) based on motives which are in themselves infallible and are known to be infallible. 188

15. In the natural order, objective evidence is the ultimate and universal motive of certitude. 193

16. Direct certitude, too, is formal certitude, nor does it differ essentially from reflex certitude. 204

17. Metaphysical certitude alone is perfect; still, also physical and moral certitude are formal certitude, though essentially inferior. 210

18. Formal certitude may be necessary or free. 215

4. Truth and Error

19. Truth and error are had fully in the judgment alone. 226

Alphabetical Index

A

Absolute
—*Certitude* 210
—*Error* 103
—*Supposition* 20
—*Truth* 103
Abstract Idea 13
Abstraction 123, 160
Absurd 108
Accidental
—*Conversion* 38
—*Definition* 65
—*Division* 61
Acosmistic Idealism 132
Adversative Proposition 28
Ambiguity 72, 80
Analogy 18, 70, 81, 156, 214
Analytic Principle 163
Antecedent 31, 42
A Posteriori 68
Apperception 142
Apprehension, simple 12, 226
A Priori 68
Argumentation 66, 76
Authority
—*of Witnesses* 178
—*of God* 184, 199
—*in Science* 183
—*False* 236

B

Bacon 195
Begging the Question 73
Behaviorism 128
Belief 104
Berkeley 133
Body 132

C

Categories 15, 58
Causal Definition 65
Cause 2
Certainty 105
Certitude
—*Definition* 104, 188
—*Division* 203
—*Existence* 106
—*Sources* 117
—*Ultimate Motive* 183
Circle
—*Disputation* 77
—*Legitimate* 69, 208
—*Vicious* 73
Classes 7, 59, 169
Cognition 101, 119
Cognitive Faculty 119
Collective
—*Idea* 15
—*Term* 18
Color 143
Common
—*Sense* 206
—*Sensibles* 139
—*Term* 18
Comparative Proposition 28
Complex
—*Proposition* 26
—*Term* 17
Compound Proposition 27
Comprehension of Idea 14
Comte, Aug. 128, 164
Concept, *see* Idea
Conceptualism 154
Conclusion 42, 67

Conditional
—*Proposition* 31
—*Syllogism* 49
Conjunctive
—*Proposition* 32
—*Syllogism* 51
Consciousness 126
Consequence 42
Consequent 31, 42
Contradictory Opposition 35
Contradistinction 71, 81
Contrary Opposition 35
Convergence of Probabilities 69, 170
Conversion of Propositions 37
Conviction 104
Copula 24
Copulative Proposition 27
Corollary 76
Cosmology 4
Criterion of Truth 213

D

Deduction 69, 168
Definition 62
Degrees
—*of Certitude* 214
—*of Evidence* 218
—*of Probability* 221
—*of Truth and Error* 231
Demonstration 67, 200, 202
Descartes 74, 136, 140, 230
Descriptive Definition 64
Difference 56
Dilemma 51
Direct
—*Argument* 68
—*Certitude* 204
—*Universal* 14, 158
Disjunctive
—*proposition* 32
—*Syllogism* 50
Disputation 77
Distinction 27, 71, 80
Division 60
Double Personality 128
Doubt 104, 208, 215

E

Einstein 219
Enthymeme 51
Epistemology 4, 101
Equivocal Term 18
Equivocation 71
Error 103, 142, 223
Essence 56, 167, 175, 176
Essential Definition 63
Ethics 4
Evidence 194, 230
Evil Genius 136
Evolution 73, 116
Exaggerated Realism 154
Exceptive Proposition 28
Exclusive Proposition 28
Experience 126, 138, 201
Explicative Proposition 27
Extension
—*of Ideas* 14
—*of Terms* 18, 25
Extrinsic
—*Evidence* 198
—*Probability* 221

F

Facts 7
Faculty 117
Fallacy 50, 71
Fichte 149
Figure of Syllogism 46
Form
—*of Judgment* 24, 31
—*of Syllogism* 42
Formal
—*Certitude* 105, 188

—*Principle* 66, 169
—*Supposition* 20
Free Certitude 215
Frick 208, 216

G

Generic Difference 58
Genetic Definition 65
Genus 56, 169
Gény 229

H

Harnack 180
Hegel 149
History 185
Huet 199
Hume 73, 180
Hypothesis 70, 169, 170

I

Idea
—*Comprehension* 14
—*Definition* 12, 148
—*Division* 14
—*Extension* 14
—*Factitious* 177
—*Objective Validity* 148
—*Origin* 13, 160
—*Primitive* 150, 177
—*Relations* 16
Idealism 133, 149
Ignorance 104
Immediate
—*Evidence* 199
—*Inference* 34
—*Judgment* 41, 128
—*Principle* 163
Imprudent
—*Doubt* 215
—*Opinion* 221
Indefinite Term 18
Index 209
Indirect Argument 68
Induction 69, 169
Infallibility 120, 189
Inference, *see* Reasoning
Inferiors of Concept 56
Intrinsic
—*Evidence* 198
—*Probability* 221

J

James, W. 126
Judgment 22, 120, 128, 195, 226

K

Kant 115, 124, 133, 145, 149, 154, 160, 165, 196, 201, 224
Knowledge 1, 7, 54

L

Lamennais 140, 200
Laws
—*of Definition* 65
—*of Division* 61
—*of Syllogism* 44
—*of Thought* 165, 167
Legitimate Circle 69, 208
Locke 147, 180
Logic 3, 7, 207
Logical
—*Proposition* 24
—*Supposition* 20
—*Truth* 103, 223
Lotze 224

M

Malebranche 136
de Maria 229
Material
—*Object* 2, 8, 101
—*Principles* 66
—*Supposition* 19
Mathematical Certitude 216
Matter
—*of Judgment* 24, 31

—*of Syllogism* 42
Mechanism of Cognition 125
Mediate
—*Evidence* 199
—*Inference* 34
—*Judgment* 41, 128
—*Principle* 163
Mercier 205, 224
Metaphorical Supposition 19
Metaphysical
—*Certitude* 210
—*Definition* 64
Metaphysics 3
Method, 7, 53, 167, 175
Methodical Doubt 208
Middle Term 42
Mill, J. St. 165, 175
Modal Proposition 29
Moderate Realism 158
Modifier of Complex Term 18
Montaigne 140
Moods of Syllogism 48, 50, 51
Moral Certitude 210, 215
Motive of Certitude 189

N

Necessary Certitude 215
Necessity 202
Negative
—*Proposition* 25
—*Argument* 68
Neo-Platonists 133
Newman 170, 220
Nominal Definition 62
Nominalism 154
Notional Assent 220
Noumena 115

O

Object 119, 194, 202
Objections 76, 83, 209
Objective
—*Certitude* 105
—*Evidence* 194
—*Idealism* 133
—*Skepticism* 108
Objective Validity
—*of Ideas* 148
—*of Principles* 163
Ockam 224
Ontological Truth 103
Ontology 4
Opinion 104, 221
Opposition 34
Origin of Ideas 13, 160

P

Palmieri 211
Part 60
Particular
—*Idea* 15
—*Proposition* 26
—*Supposition* 21
—*Term* 18
Per accidens 121
Perception 138
Per se 121
Personal Supposition 20
Pesch 208
Philosophical Definition 64
Philosophy 1
Physical
—*Certitude* 210
—*Definition* 64
—*Laws* 169
Plato 154
Polysyllogism 51
Popular definition 64
Porphyrian Tree 58, 162, 194
Positivism 164, 171
Practical Certitude 105, 110, 188, 192
Pragmatism 112, 225
Predicables 56, 162
Predicaments 15, 58

Predicamental Tree 58
Prejudice 238
Premises 42, 171, 175
Primary Qualities 147
Primitive
—*Idea* 150, 177
—*Truth* 208
Principle 66, 70, 163
Probability 67, 70, 104, 170, 221
Proper
—*Definition* 64
—*Sensible* 138, 143
—*Supposition* 19
—*Term* 18
Property 57, 175
Proposition
—*Definition* 22
—*Division* 22, 26, 31
—*Matter and Form* 24, 31
—*Quality and Quantity* 25, 29, 48
Prudent
—*Doubt* 215
—*Opinion* 221
Psychologism 9, 115
Psychology 4, 9, 125
Public Opinion 237
Pyrrho 108

Q

Quality
—*of Bodies* 147
—*of Proposition* 25, 29, 48
—*of Sensation* 139
Quantity of Proposition 25, 29, 48

R

Real
—*Assent* 220
—*Defined* 132
—*Definition* 63
—*Supposition* 20
Realism
—*Exaggerated* 154
—*Moderate* 158
Reasoning 7, 8, 33, 168
Reflex
—*Certitude* 204
—*Judgment* 228
—*Universal* 14, 155, 158
Regressive Argument 69
Reid, Th. 195
Relative Proposition 32
Relativism 112
Remer 229
Respective Certitude 105, 188, 192
Restrictive Proposition 27
Retort 68
Right 7
Rules, *see* Laws

S

Schelling 149
Scholastic Disputation 77
Scholion 76
Science 7, 54, 59, 141, 143, 146, 225
Scientia 1, 7, 54
Scientific
—*Definition* 64
—*Logic* 207
—*Method* 7, 201
—*Testimony* 183
Secondary Qualities 147
Sensation 138
Sense Cognition 120, 138
Sensibles 138
Sign 17
Simple
—*Apprehension* 12, 226
—*Conversion* 38
—*Idea* 14
—*Proposition* 26

—*Term* 17
Singular
—*Idea* 15
—*Proposition* 25
—*Term* 18
Skepticism 107
Slogans 240
Sophism 71
Sophist 108
Sorites 51
Sound 143
Sources of Certitude 102, 117, 203
Species 56, 169
Speech 17, 61
Spencer, H. 128, 131
Spinoza 216
States of the Mind 104
Suarez 13, 160
Subaltern Opposition 35
Subcontrary Opposition 35
Subdivision 60
Subject
—*of Cognition* 119, 199
—*of Complex Term* 18
—*of Proposition* 24
—*of Syllogism* 42, 67
Subjective
—*Evidence* 195, 199
—*Forms* 115, 149, 154, 196
—*Idealism* 133
—*Skepticism* 108
Subsumption 84
Supposition 19
Syllogism 40, 168
System 55, 162, 173

T

Taine 164
Term
—*Definition* 8, 11, 16
—*Division* 17
—*Middle* 42
Testimony 178
Theology 4
Thesis 74
St. Thomas 124, 160, 173, 195, 217, 223
Traditionalism 200
Transcendental
—*Idea* 15
—*Idealism* 133
Truth
—*Criterion* 229
—*Definition* 7, 103, 223
—*Degrees* 231
—*Possession* 226
—*Primitive* 208

U

Universal
—*Idea* 13, 153
—*Proposition* 25
—*Skepticism* 107
—*Supposition* 21
—*Term* 18
Univocal Term 18, 214

V

Vicious Circle 73

W

Watson 128
Whole 60
Will 22, 215, 235
William of Champeaux 155
Witness 178
Word 17
Wundt 126

Date Due

OC 6 '56			
FE 21 '57			

BC108
C84ℓ
c.8

22890

Cotter